DIV 15

SYMONS

CATALOG No. F-5

A. I. A. FILE No. 4-D-3

System of

WALL FORM CONSTRUCTION

SYMONS CLAMP & MANUFACTURING COMPANY

4249 DIVERSEY AVENUE • Phone DIckens 2-5141 • CHICAGO 39, ILLINOIS

Received in Dw 10 3-7-50

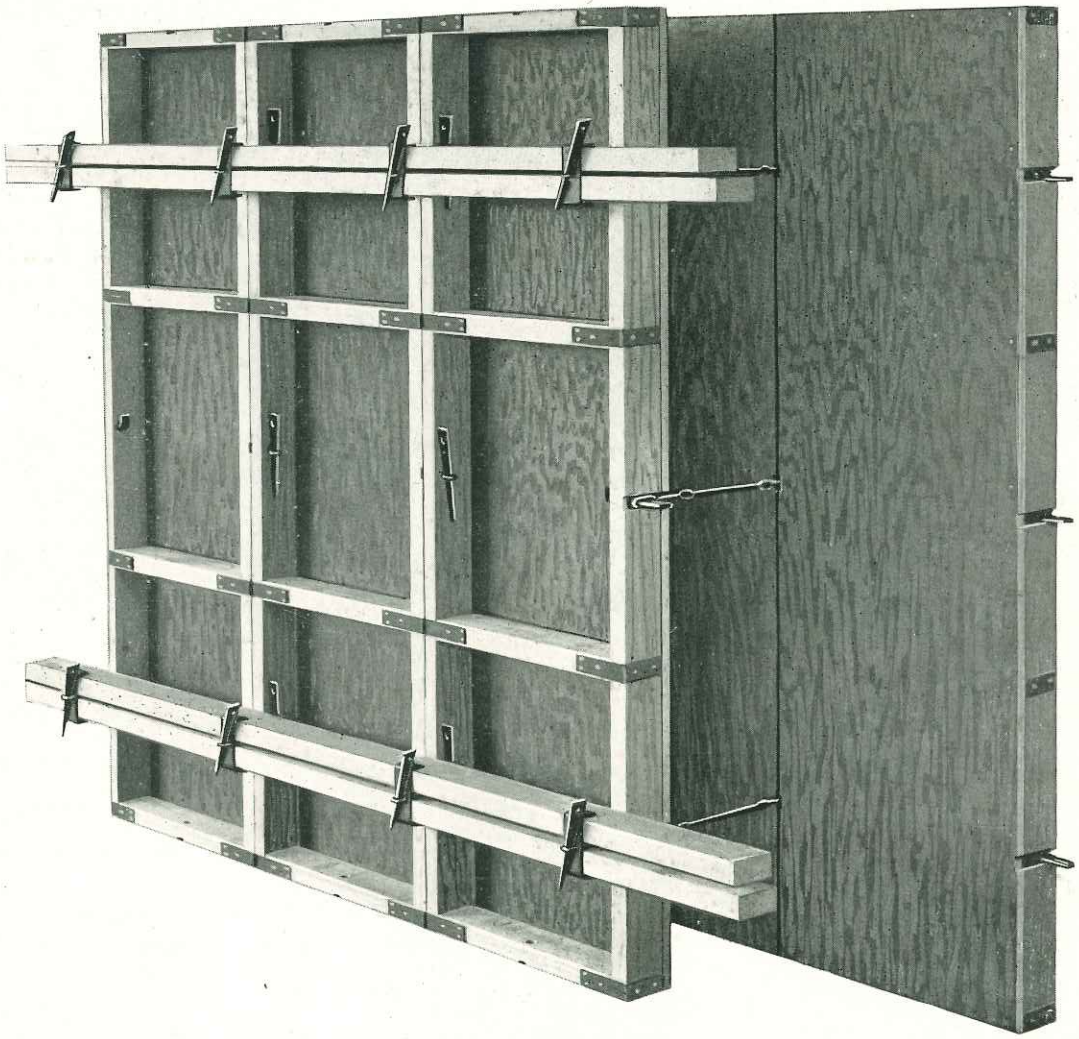
INTRODUCING—

SYMONS SYSTEM of concrete form construction utilizes the panel system same as you have been using. Accordingly, your superintendent and carpenters are familiar with the setting up and taking down of the forms. In the Symons system, however, there is this difference: the tie rods are anchored from the sides of the panels, they do not pass through. The advantage is that you save the time spent in fishing for the tie openings in the opposite panel. Also in taking down the forms, you have the decided advantage in that as soon as the connecting bolt to which the ties are anchored is removed and the panels are broken loose from the concrete, they may be lifted straight up, they do not have to be pushed away and disengaged from the ties as the ties do not go through the panels.

The tie rod is similar to what you have been using, it has the breakback feature, but instead of spreader washers that interfere with the feeding through of the ties and that makes necessary large holes in the panels, the Symons tie has looped ends through which the connecting bolt for connecting the panels is passed, making a combined spreader and tie and doing away with the necessity of making any holes in your panel.

A glance through these pages will give you a better understanding of the system which you are going to like.

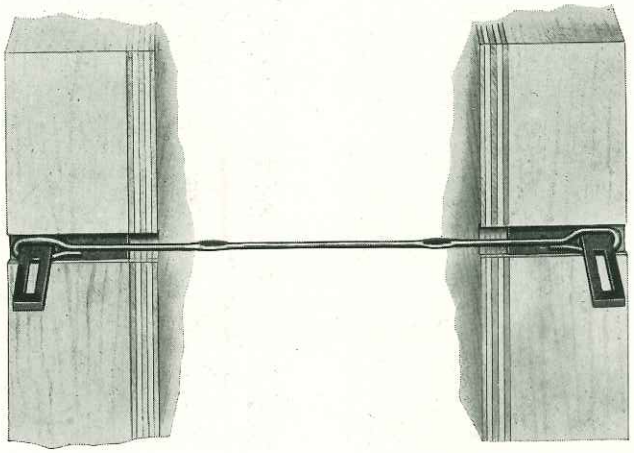
Symons Wall Form System is protected by Patent Nos. 2236616, 2395204 and 2310669.
Other patents pending.

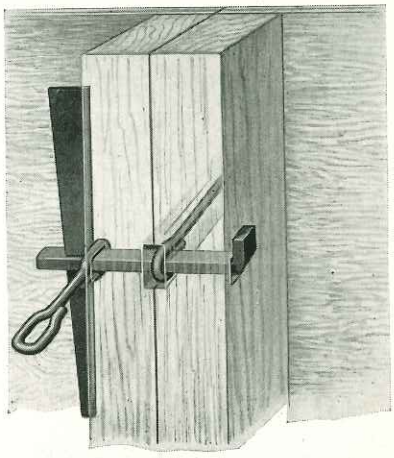


The same Panels you have been using; hook up only is different.

The Tie Rods in the standard panel, which is 2' wide, do not go through the panel; they are anchored at side of panel and hold both ways—no fishing through panel for tie opening.

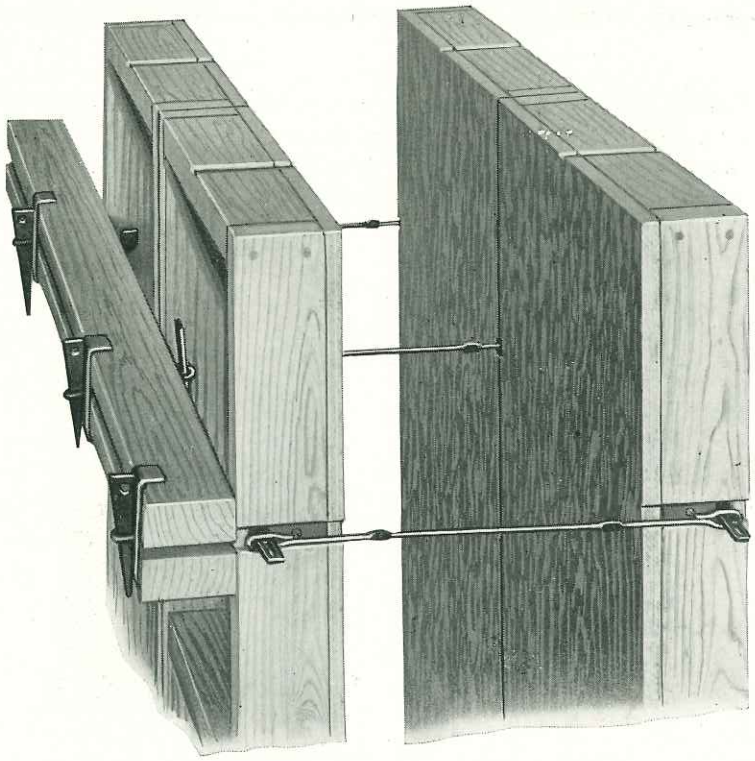
Symons Two Way Form Tie used with Symons Panel Form System hold both ways; are fast and break back easily and accurately; no spacing washer or spreader required; anchorage of loop ends makes spreader.



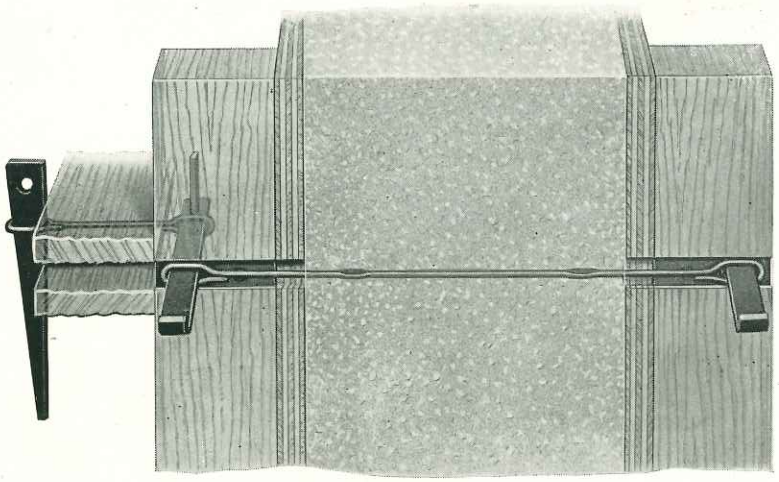


Protruding wire is for liner if required. Anchorage of loop ends of ties makes spreader.

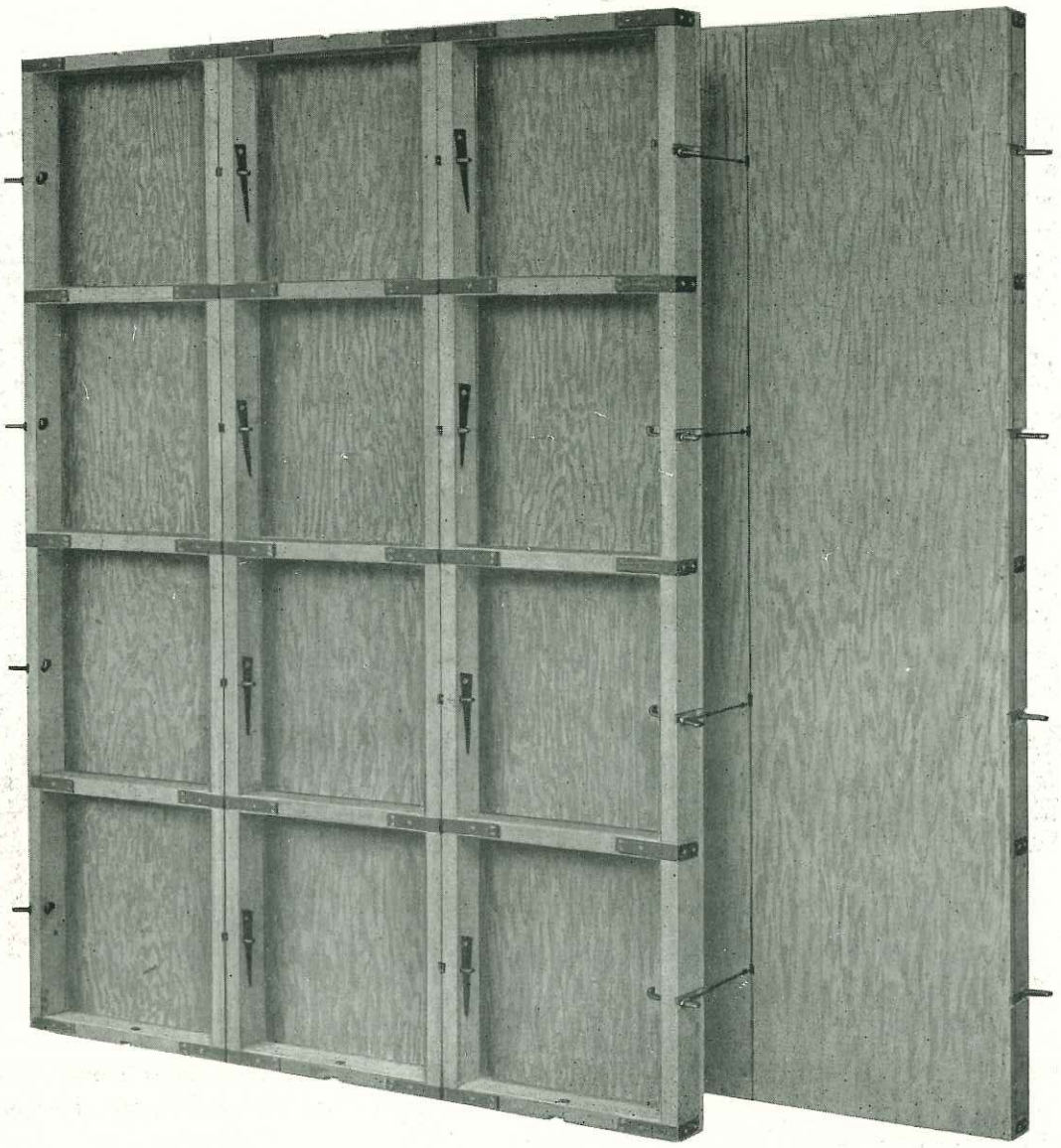
Waler or liner ties operate independently of form ties and may be used an indefinite number of times.

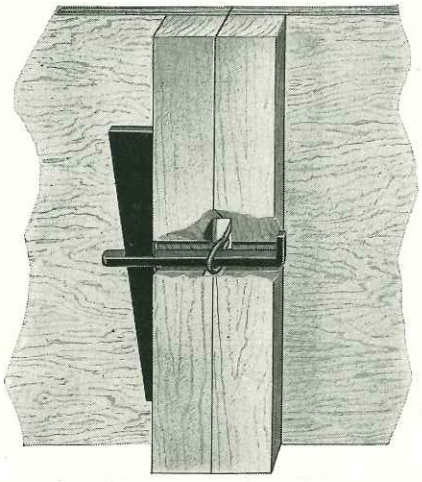


The tie rods being anchored from the side; remove connecting bolts and panels may be lifted straight up. No interference by protruding ties.



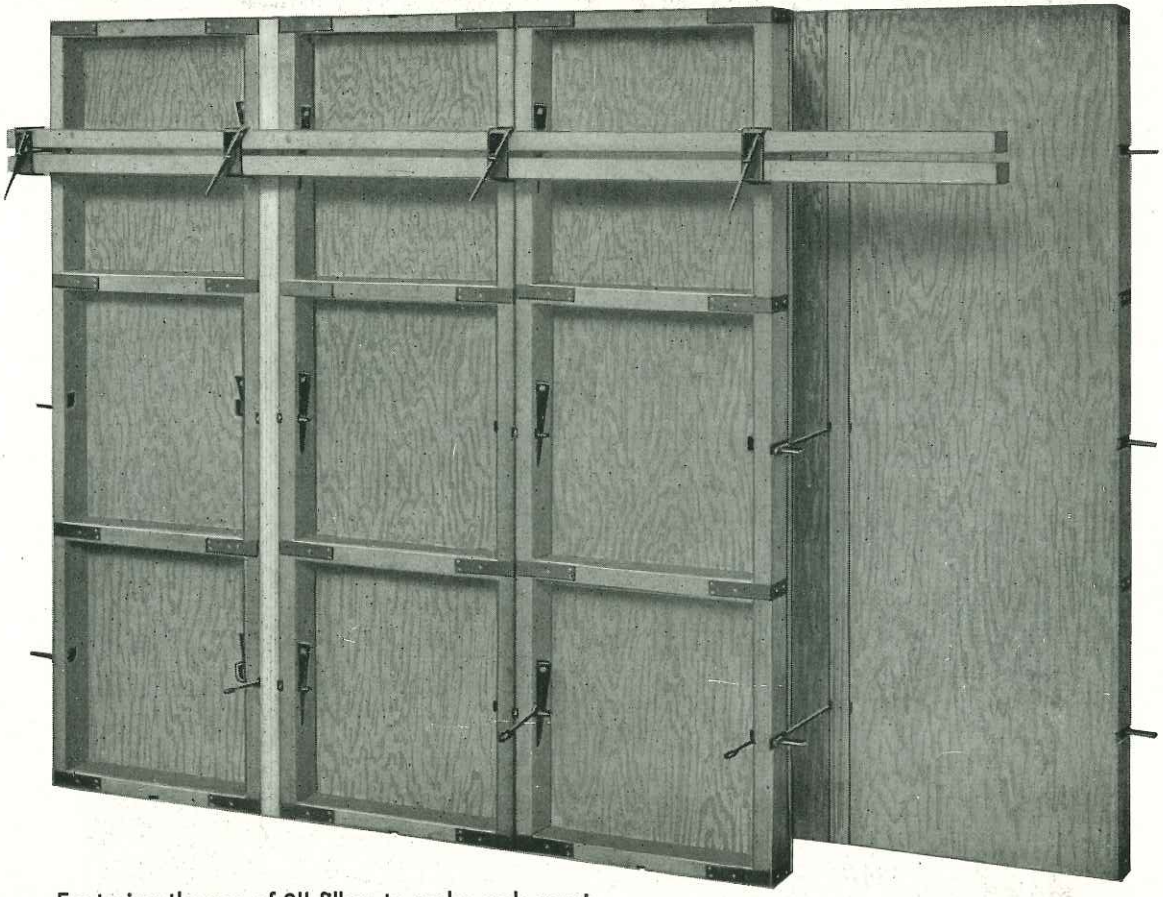
Liner or Walers may be attached on either side or both sides or not at all. Ordinarily liners are placed on one side only.





Connecting bolt for panels also acts as anchorage for Tie rods; this bolt has a slight taper making easy to remove.

Featuring our standard panel which is made in sizes 2' x 4', 2' x 6' and 2' x 8'; photo is the 2' x 8' size. While use has made the wider panel, 4', popular, we recommend the lesser width; for the reason that in the 2' width the tie rods do not pass through the panel; and the removal of the connecting bolt to which the ties are anchored allows the panel after being broken loose from the concrete to be lifted straight up. There is no backing away from the protruding ties. And in setting up there is no fishing through for tie opening in the opposite panel. The ties being anchored at the side as illustrated in the above sketch there can be no filling up with concrete of the tie opening. The 2' widths are lighter in weight and easier to handle both in setting up and taking down. Stripping is made much easier when the panel is not more than 2' wide with no protruding wires. The 2' widths are faster.



Featuring the use of 2" fillers to make ends meet.

The liner wires are slipped over the connecting bolts before tightening wedge is inserted. The two by four liners are put in place after the forms are erected and are used on one side only. Oftentimes not at all.

A 2" filler may be inserted any place one or two at a time between panels. It does not matter how many you use. They are easily made on the job or furnished by us, if ordered.

What we term a 2" filler may be made by ripping 4⅜" off a 2" board or adding a 1" strip to a 2" x 4", making a 2" x 5" or, strictly speaking, a 1⅝" x 4⅜" strip. However, if furnished by us it is full 2" thick.

No matter how many pilasters, how many corners, or how much cut up your wall may be, you will not need a saw in erecting the forms; fillers are provided in the following sizes—1"—2" 6"—8"—10"—12"—16"—18" and 20" and are furnished with the panels on a rental basis at no extra cost per square foot.

It is very easy in a wall to determine what fillers are required (see blueprint). We recommend that fillers, if more than one in a stretch of wall, be distributed between panels, not all used together.

Important—Do not throw panels out of alignment by driving wedge through connecting rod too tight—*leave loose*.

The Pilaster — Two Methods of Construction

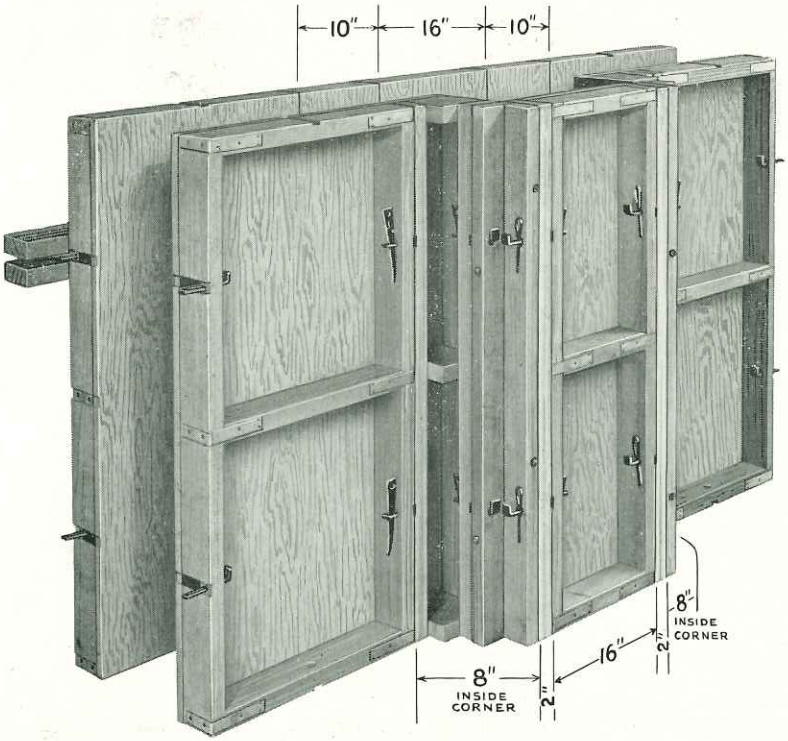


Fig. 3

Fig. 3 shows pilaster 20" wide and protruding from wall surface 8"—there were used 2 inside corner pieces and 2 outside corner pieces, Figs. 1 and 2, page 8. The inside corner pieces make the depth 8". For the width 20", there were used two 2" fillers and one 16" filler.

In the wall opposite these parts, there were used two 10" fillers and one 16" filler. The 16" filler matches up with the 16" filler in the protruding part, and the 10" fillers match up with the inside 8" corner pieces plus the 2" fillers.

For variation in width, you would, of course, use different size fillers.

If pilaster protrudes more than 8" insert fillers of suitable widths.

If the pilaster protrudes less than 8", use construction as in Fig. 4.

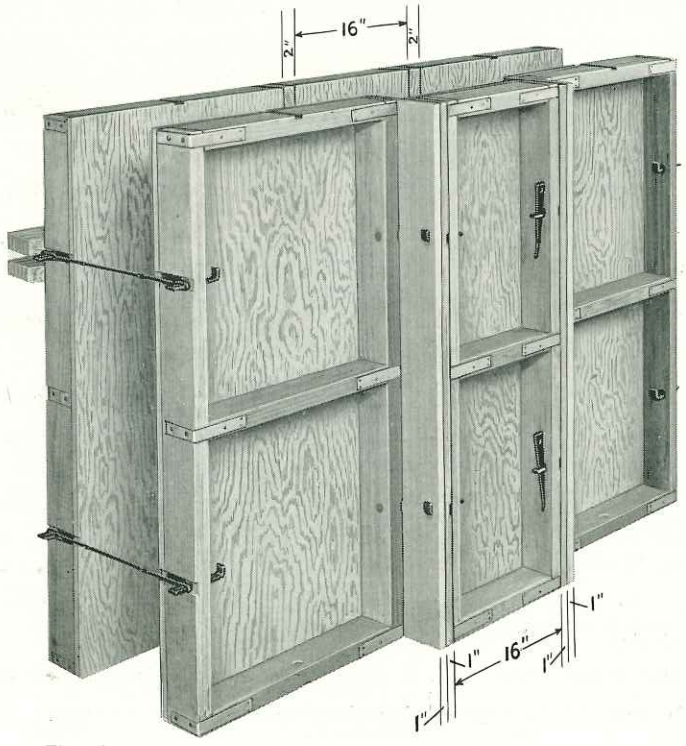


Fig. 4

Fig. 4 shows construction of pilaster that protrudes from the wall less than 8" and is 18" wide. (You cannot use the inside corner pieces as they are 8" each way.) In place, you use 1" boards we designate as pilaster boards, which are in width 4½" plus the amount of the protrusion. These 1" pilaster boards are nailed to the adjacent wall panels and are secured to the 1" and 16" fillers by connecting bolts that pass through all three, as shown in photo. In addition there is used in the protruding part a 16" filler.

In the wall opposite, a 16" filler is used with a 2" filler on each side. These 2" fillers match up with the 1" fillers plus the pilaster boards.

In ordering ties for the pilaster, give wall thickness plus the amount of protrusion. The ties are placed between the 16" and 1" fillers which leaves the ties imbedded in concrete 1" from the sides of the pilaster.

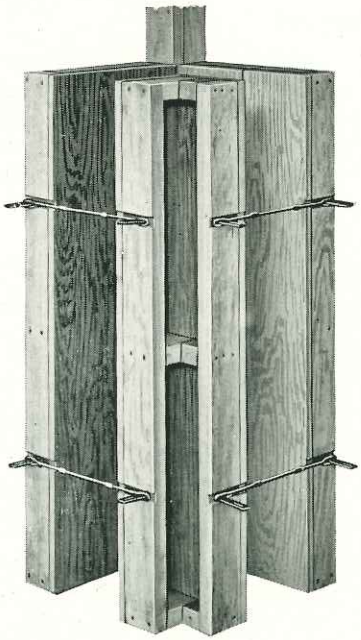


FIG. 3, wall thickness 8"—two 8" fillers, or one 16" filler on each side of the outside corner piece, Fig. 2.

FIG. 1
8" x 8" Inside corner

FIG. 2
Outside corner

All corners require inside and outside corner pieces, Fig. 1 and Fig. 2. The inside corner piece is 8" wide each way, hence the dimensions to be filled in at the opposite side corner are always wall thickness plus 8" as per following:

FIG. 4, reverse side of Fig. 3 showing hookup of outside corner Fig. 2.

Wall thickness 6"; 6" plus 8" equals 14" — one 12" filler plus one 2" filler, or one 14" filler.

Wall thickness 8"; 8" plus 8" equals 16" — two 8" fillers, or one 16" filler.

Wall thickness 10"; 10" plus 8" equals 18" — two 8" fillers, plus one 2" filler, or one 16" filler plus one 2" filler, or one 18" filler.

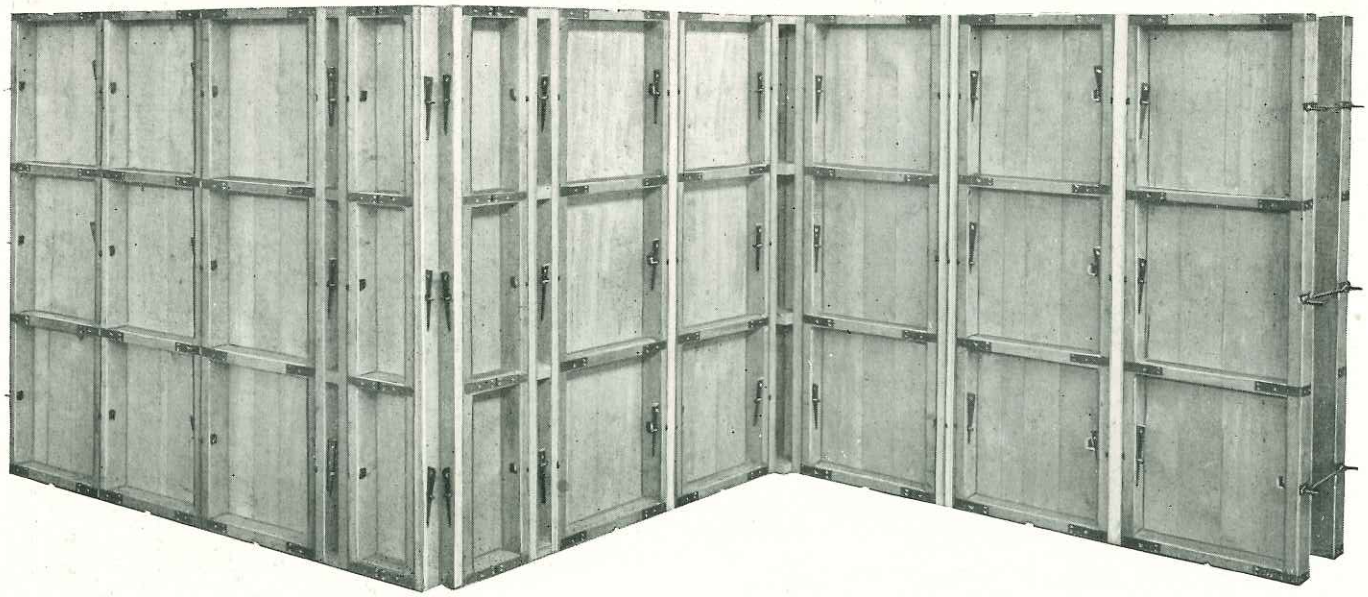
Wall thickness 12"; 12" plus 8" equals 20" — one 12" filler plus one 8" filler, or two 8" fillers plus two 2" fillers, or one 20" filler.

Wall thickness 14"; 14" plus 8" equals 22" — one 12" filler plus one 8" filler plus one 2" filler, or two 8" fillers plus three 2" fillers, or one 20" panel plus one 2" filler.

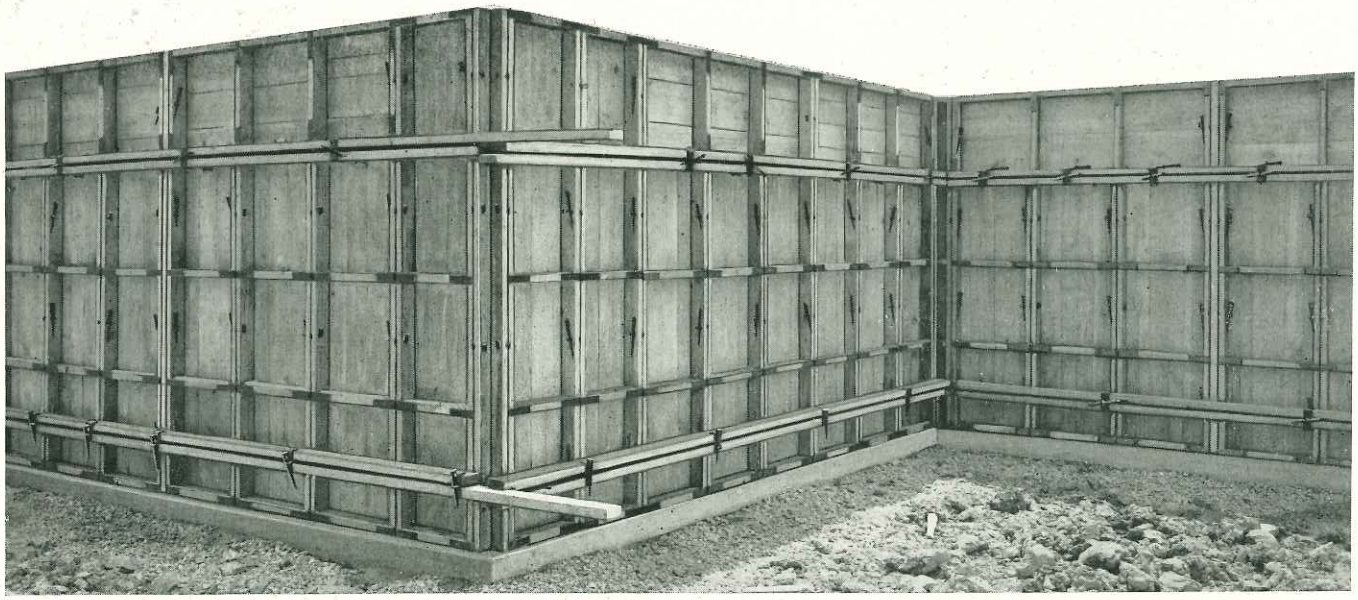
Wall thickness 16"; 16" plus 8" equals 24" — one standard panel.

For wall thickness 7", 9", 11", 13", 15", 17", add 1" board to size next under. Substitutions may be made of other size fillers for any wall thickness providing the dimensions of wall thickness plus 8" be maintained.

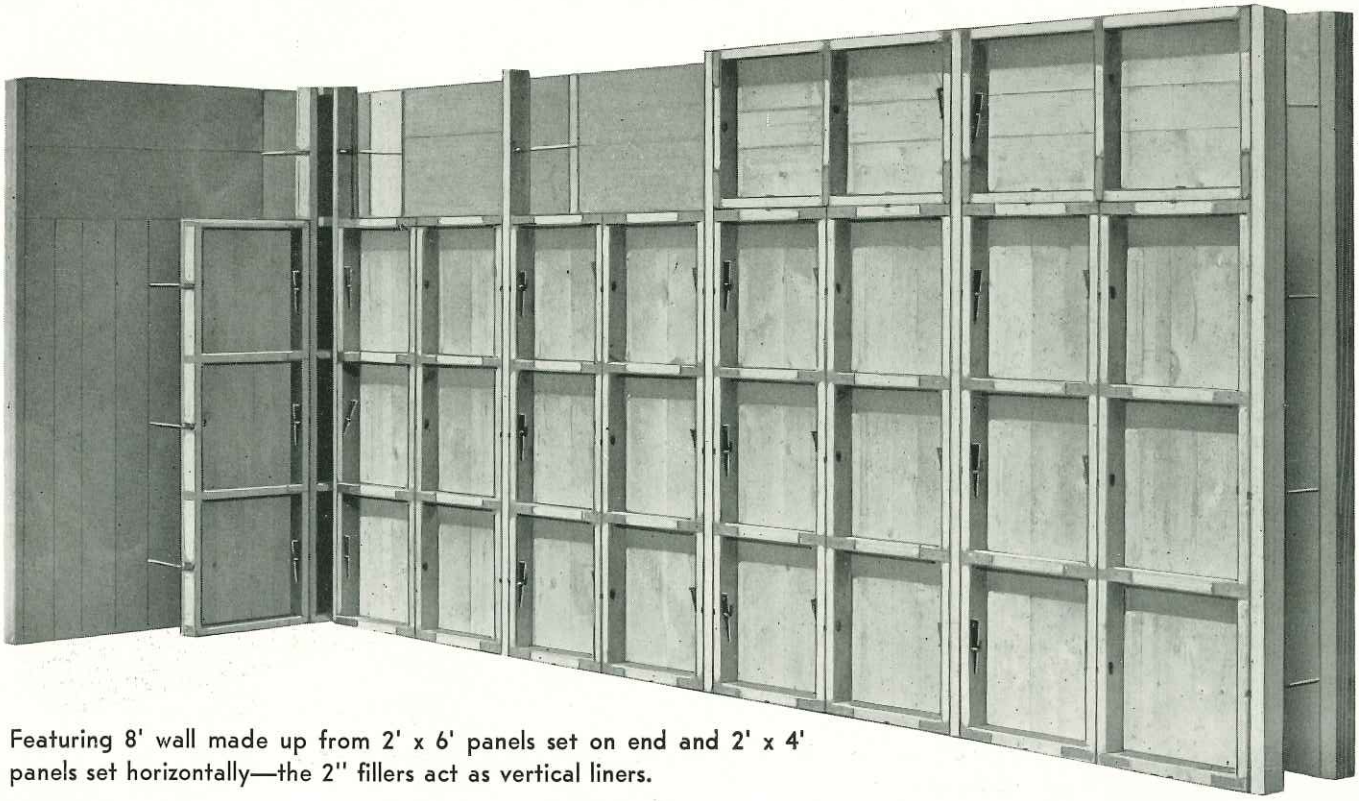
Having set up the corner as per Fig. 3, you follow with standard panels which now match with each other; placing fillers as per layout.



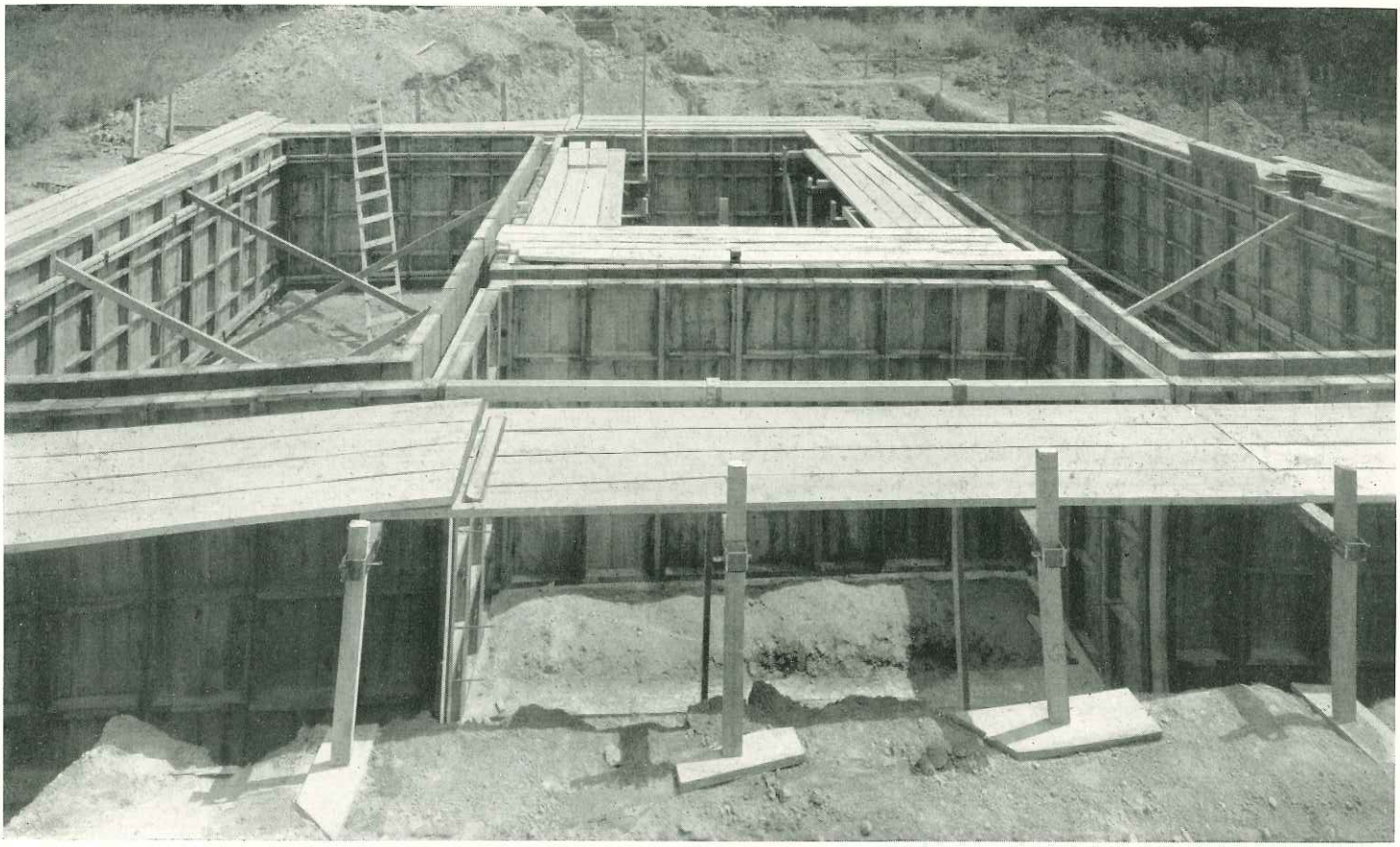
6' Wall 12" thick 2" fillers used to meet dimensions. Featuring outside and inside corners.



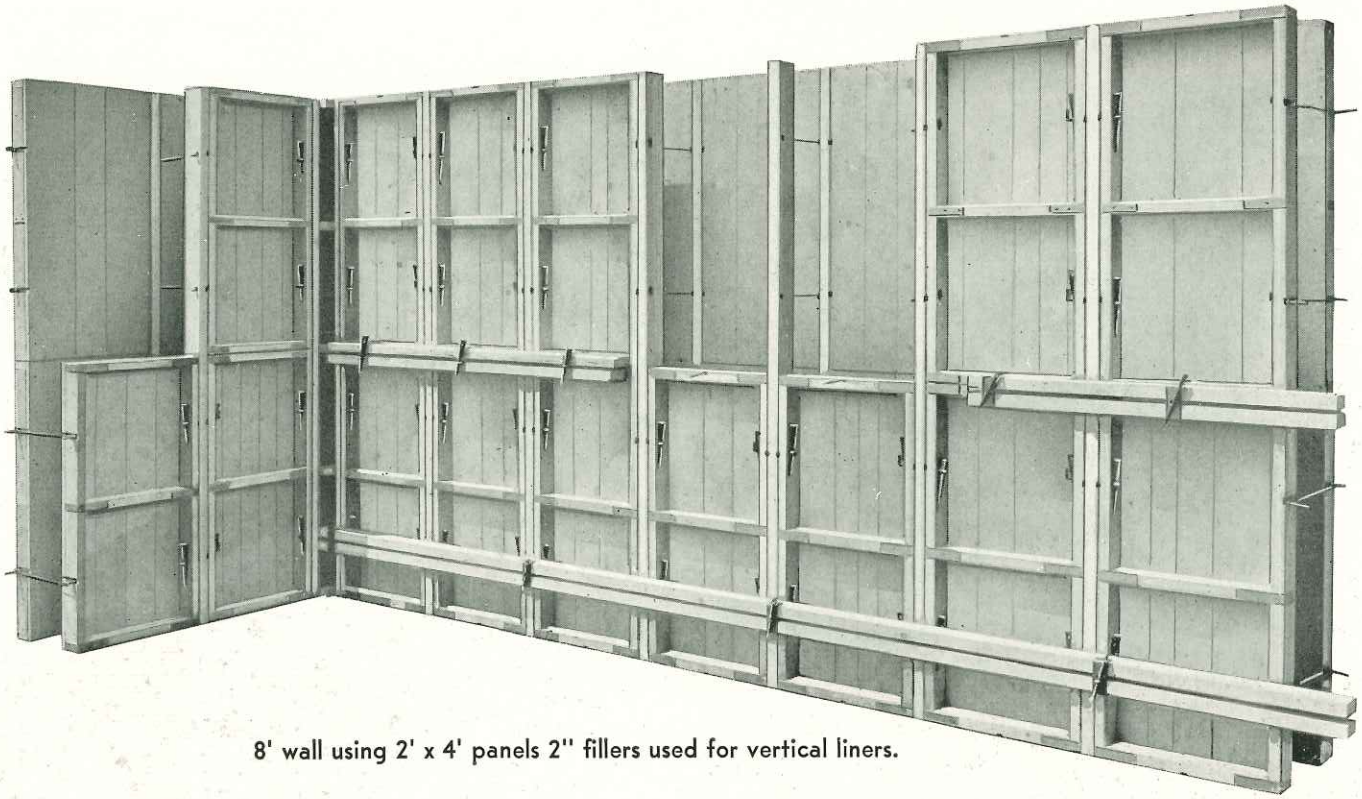
8' Wall using 2' x 6' panels set on end and longitudingly. 2" fillers used as vertical liners.



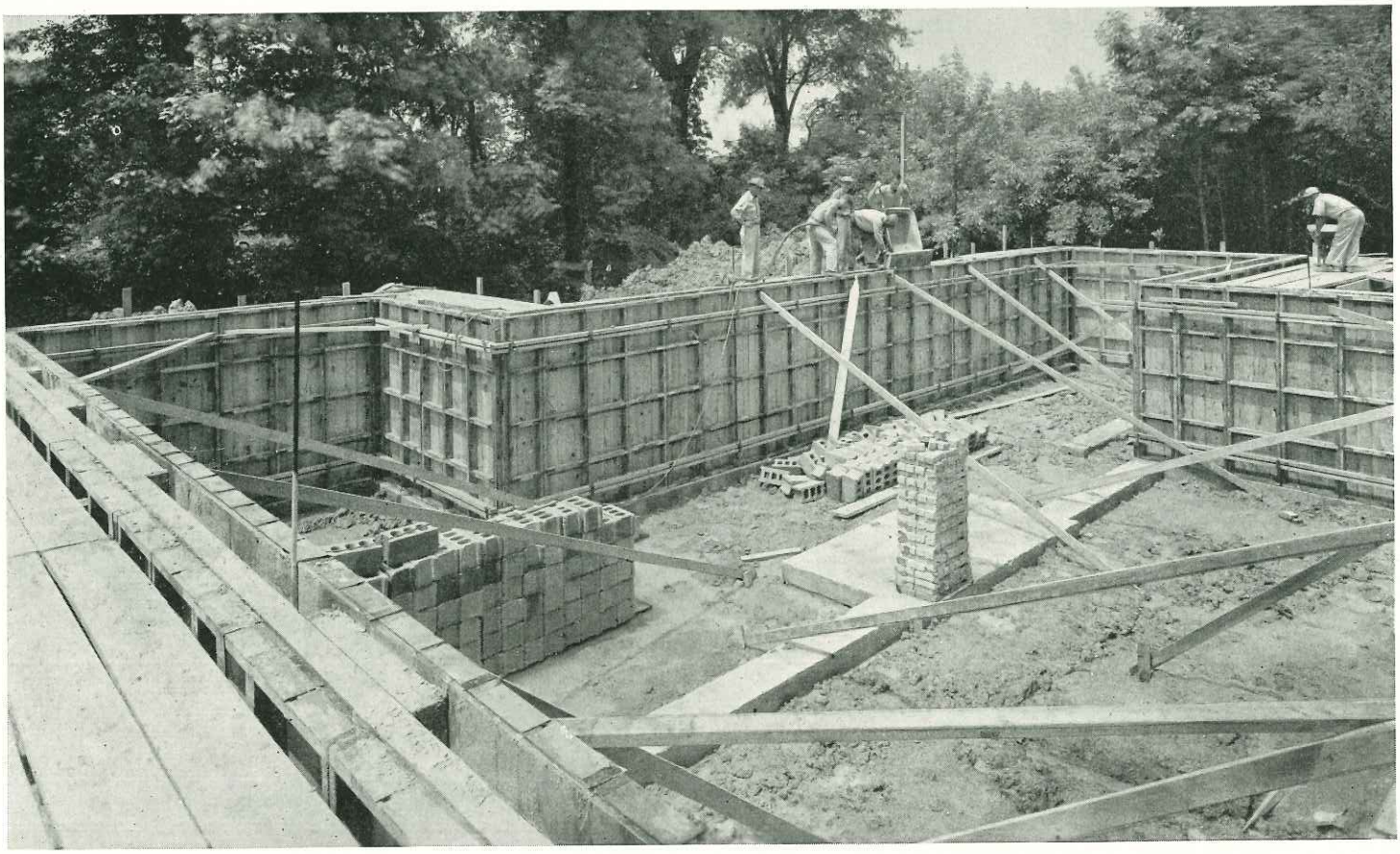
Featuring 8' wall made up from 2' x 6' panels set on end and 2' x 4' panels set horizontally—the 2" fillers act as vertical liners.



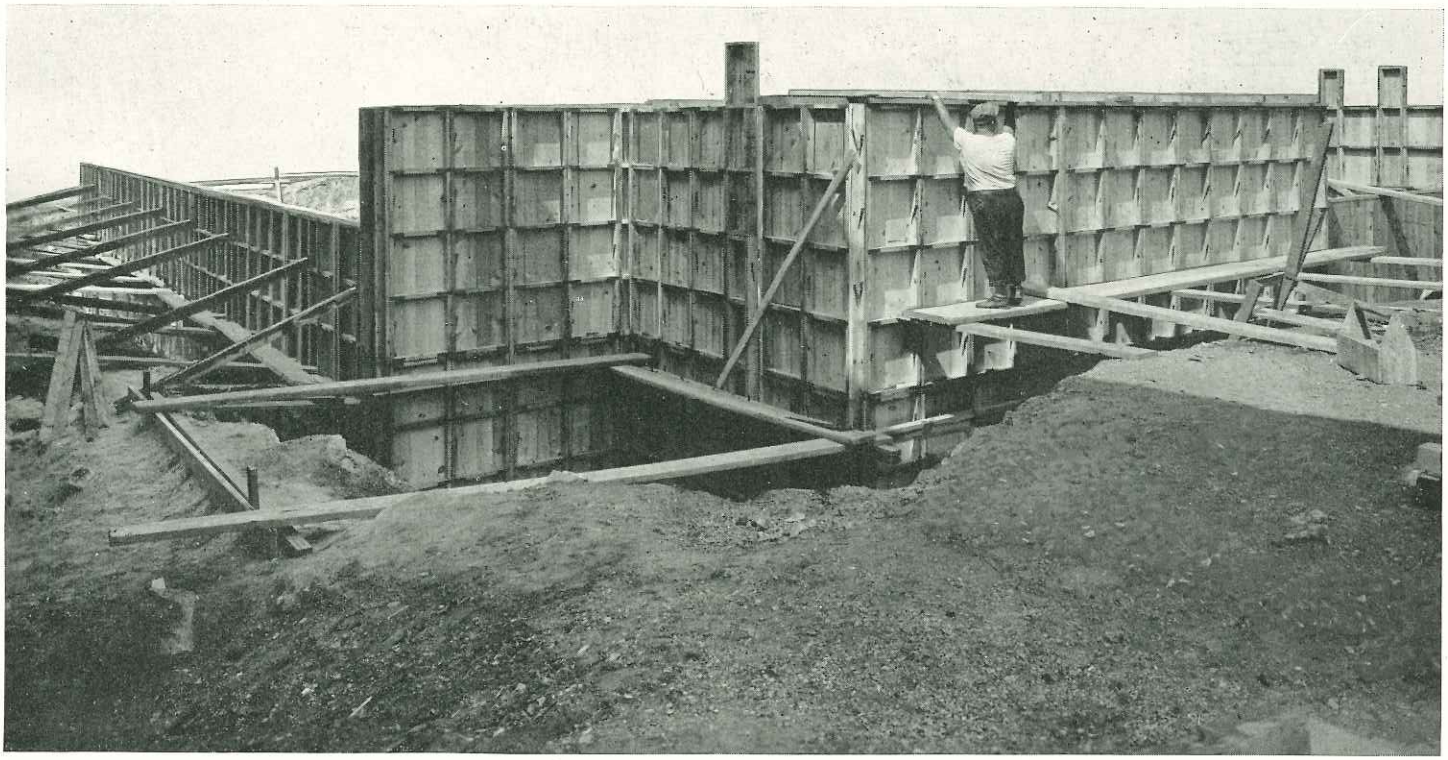
A clean-cut job, note the runway beams illustrated on page 31.



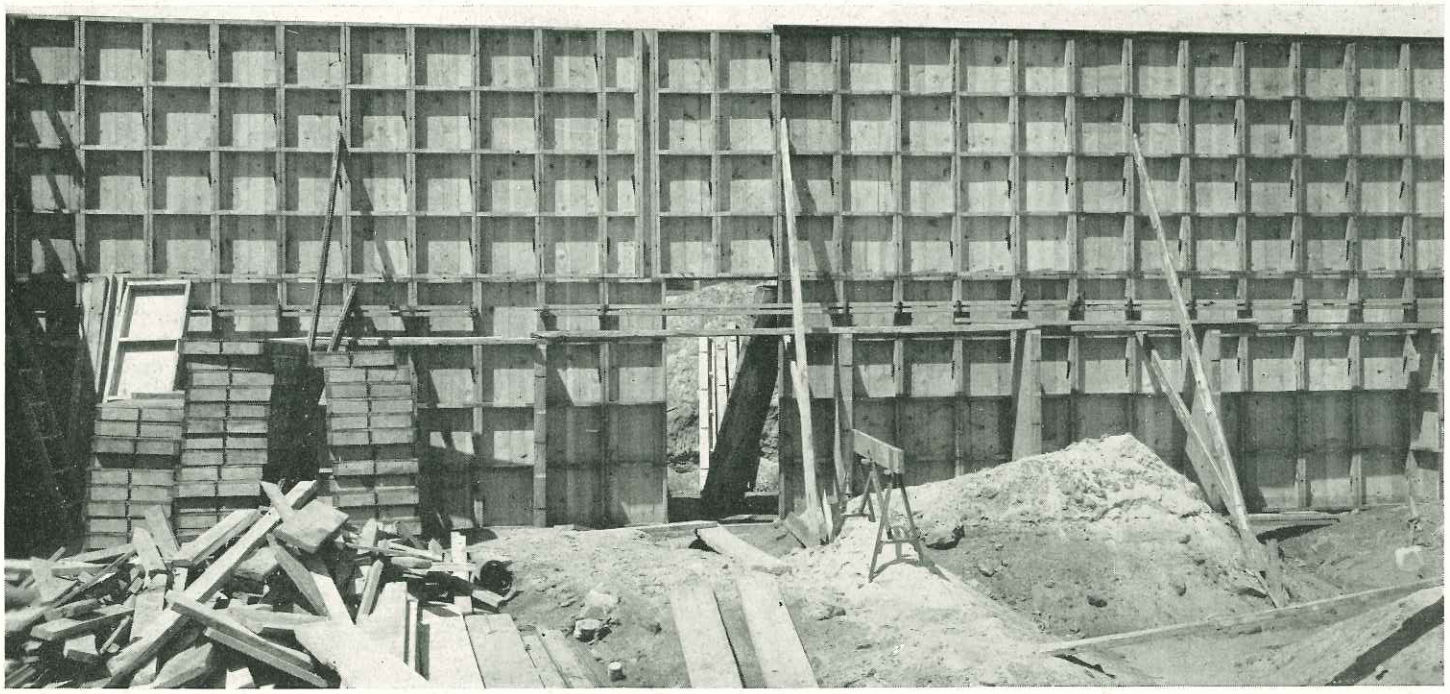
8' wall using 2' x 4' panels 2" fillers used for vertical liners.



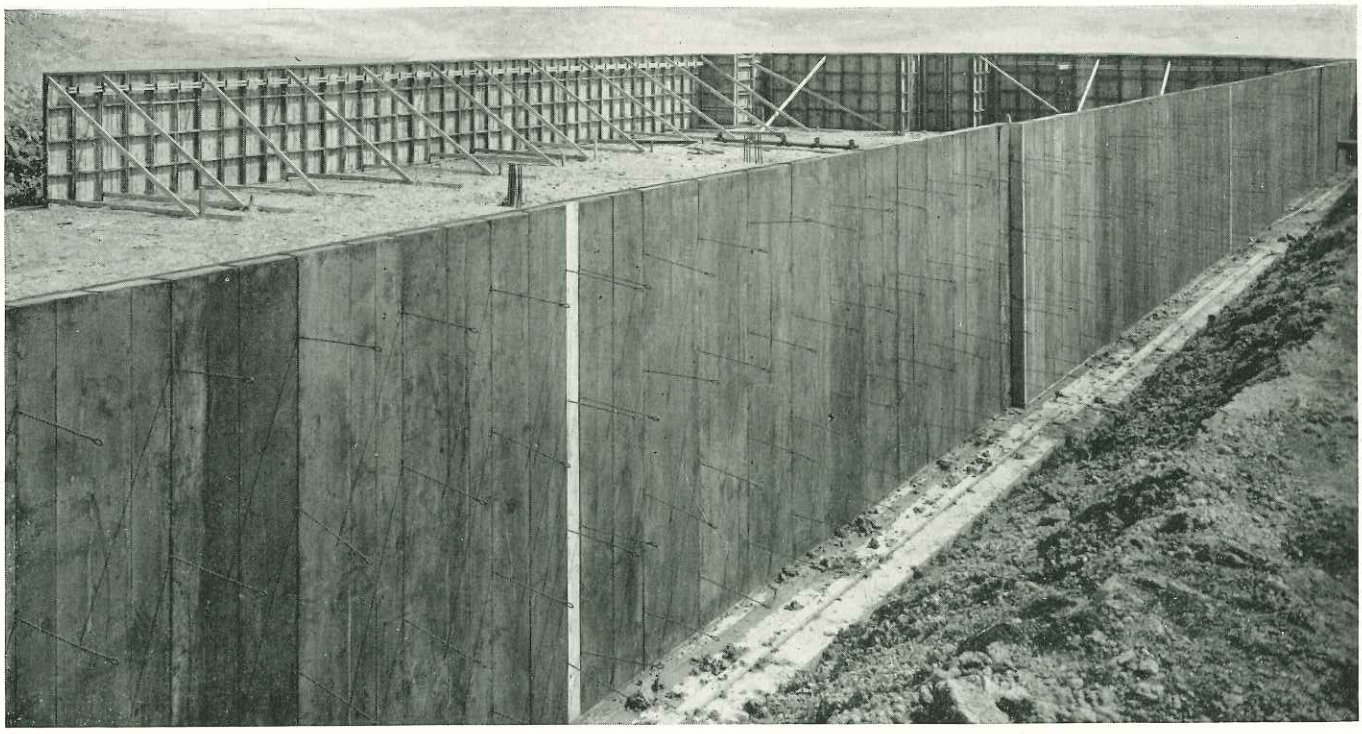
KING'S COURT CORP., *General Contractors, Wilmette, Ill.*



Our Lady of Guadalupe School — Frank Burke & Son, *General Contractors.*

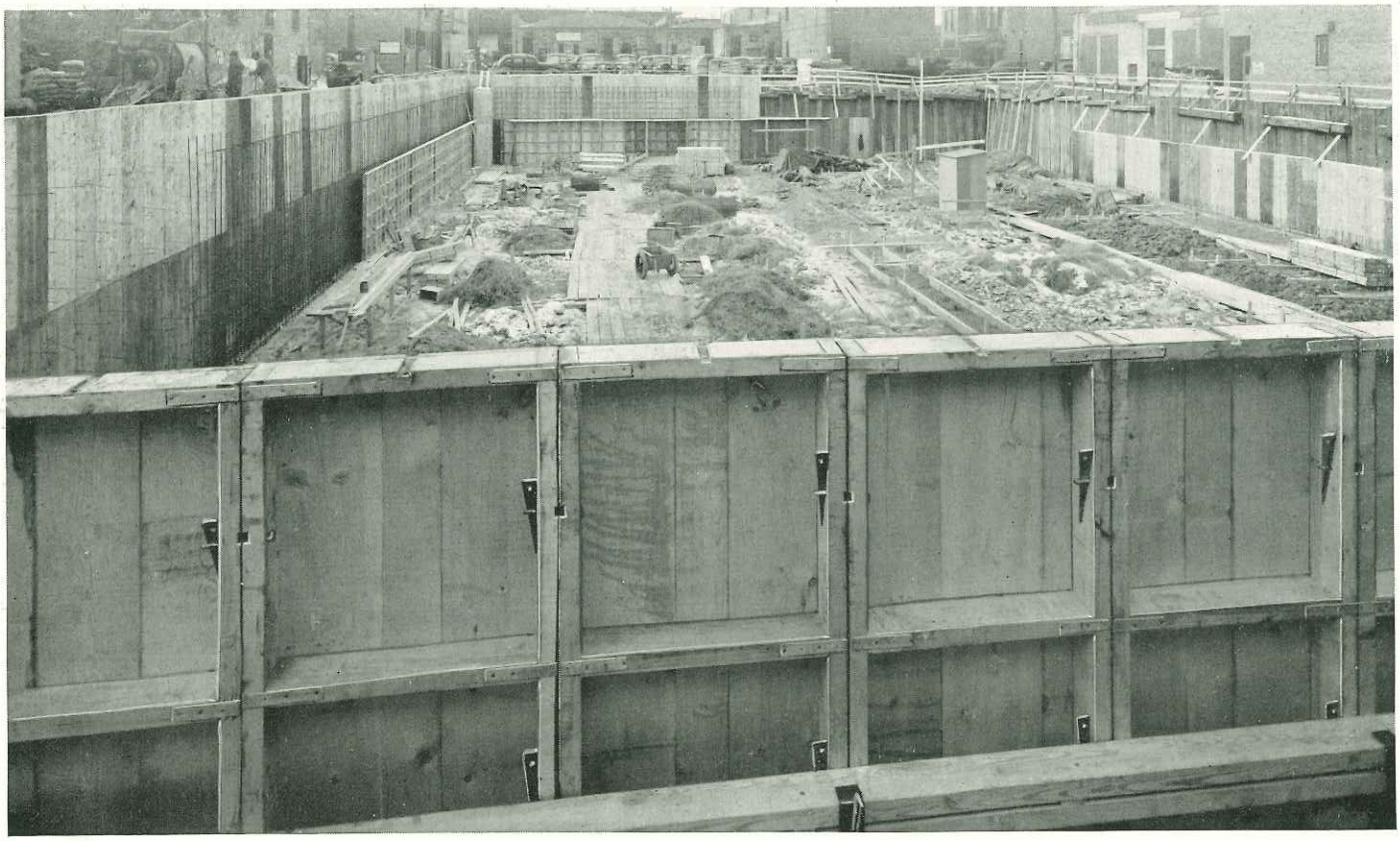


Only one waler used on Forms 16' high.

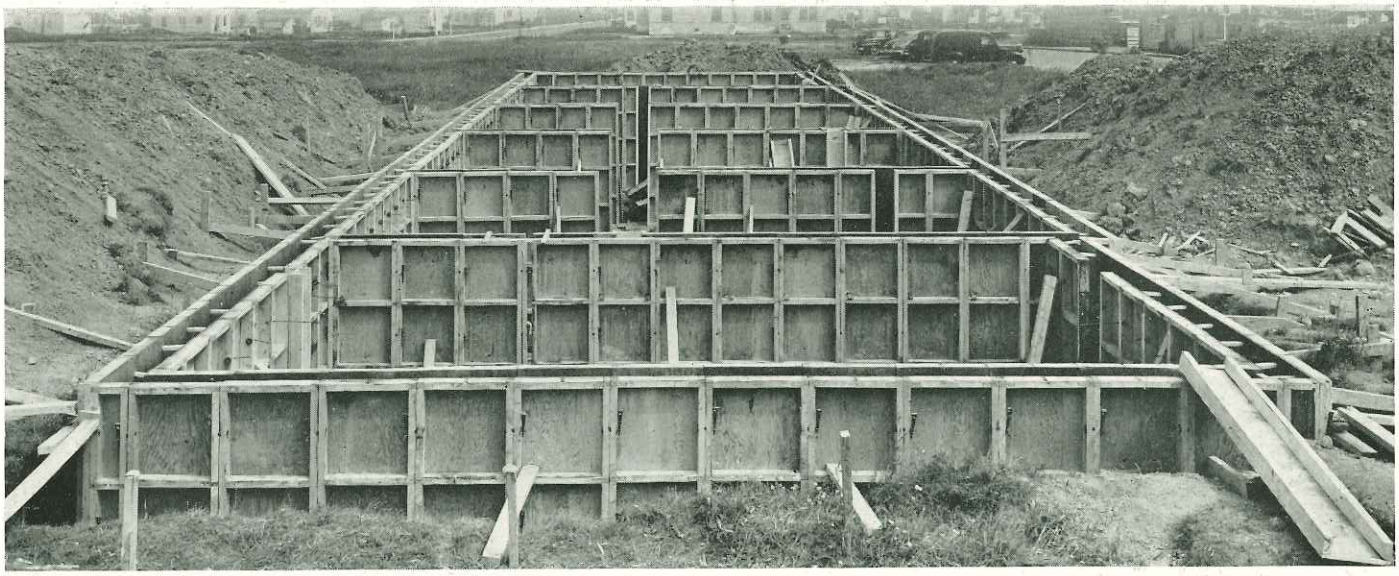


Chicago School Foundation—Frank Burke & Son, G.C.

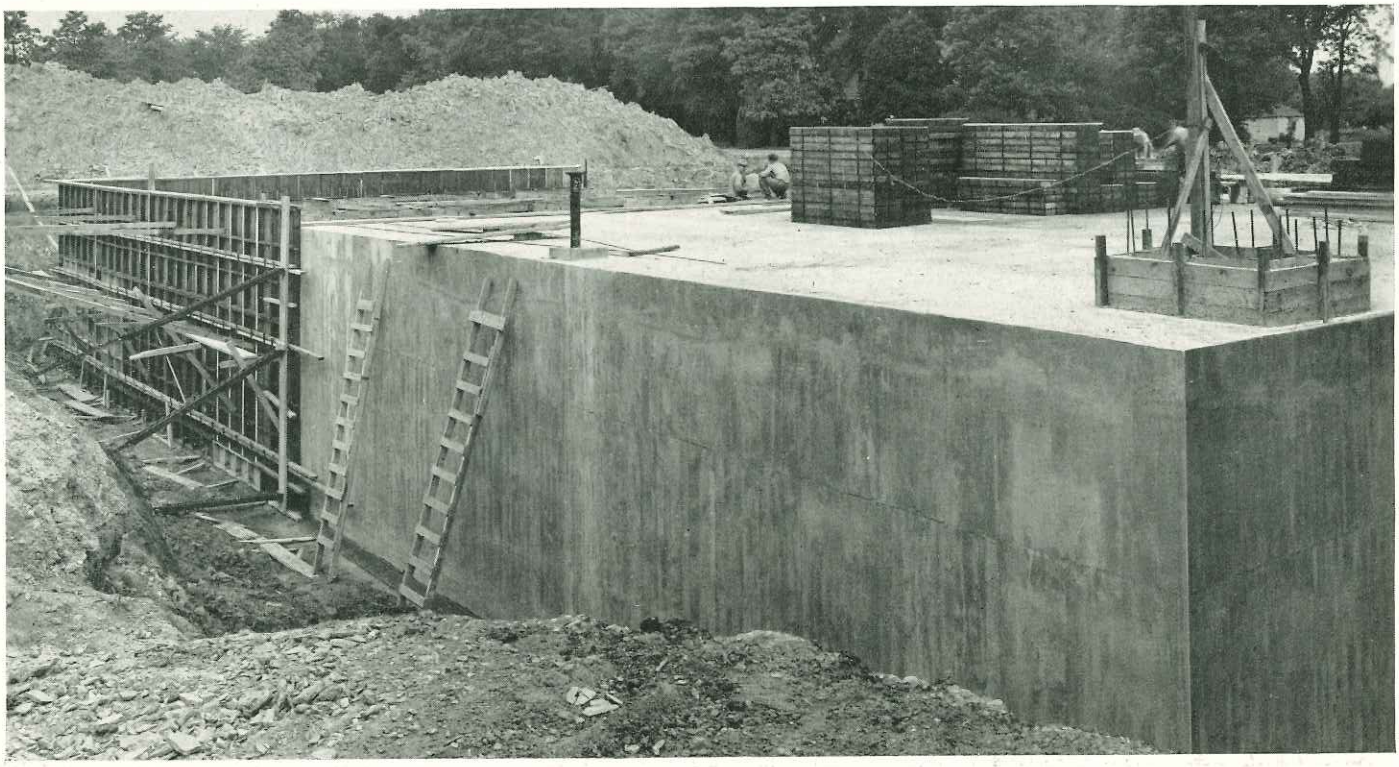
Forms are set-up for inside of 8' wall. Outside forms will match inside, but will have no braces or walers. Note, only one waler per wall; braces 8' and 10' apart.



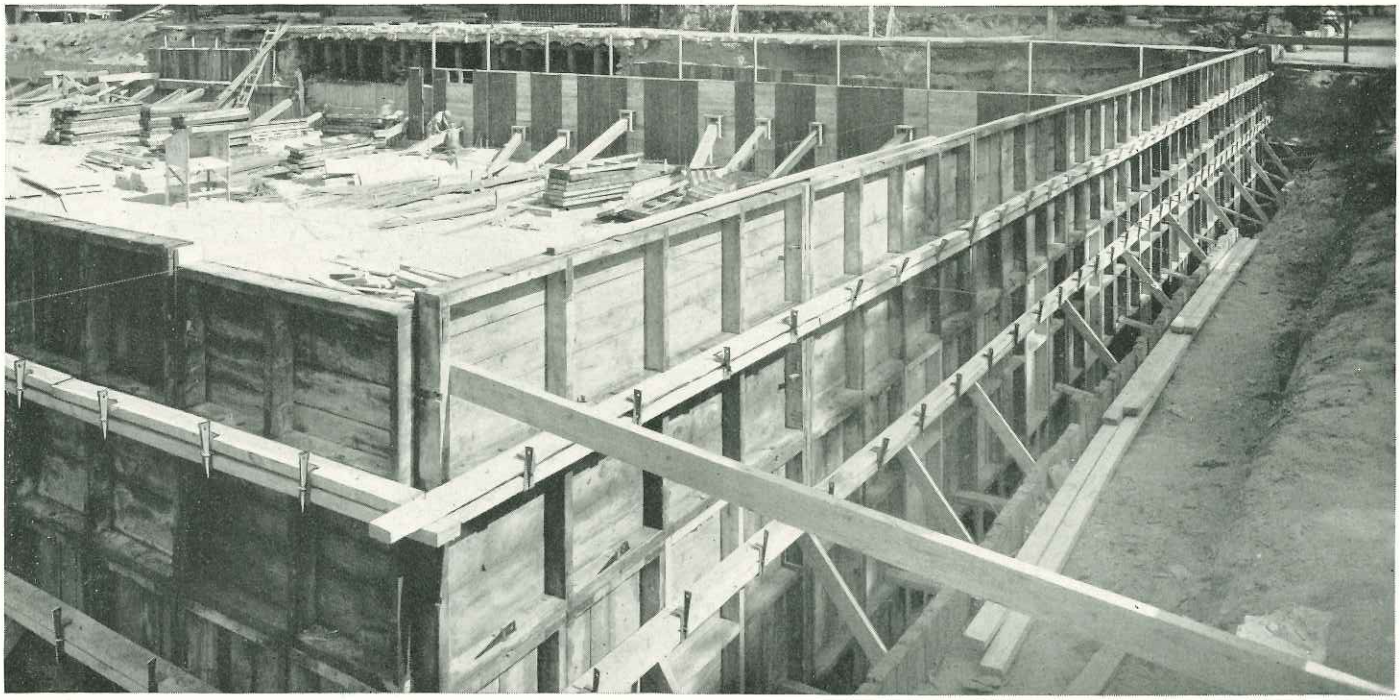
Neisner Bros., Inc., Stores, Evanston, Illinois. Inland Construction Co., *General Contractors.*



Aluminum Company of Quebec, Canada
Foundations Co. of Canada, *General Contractors.*

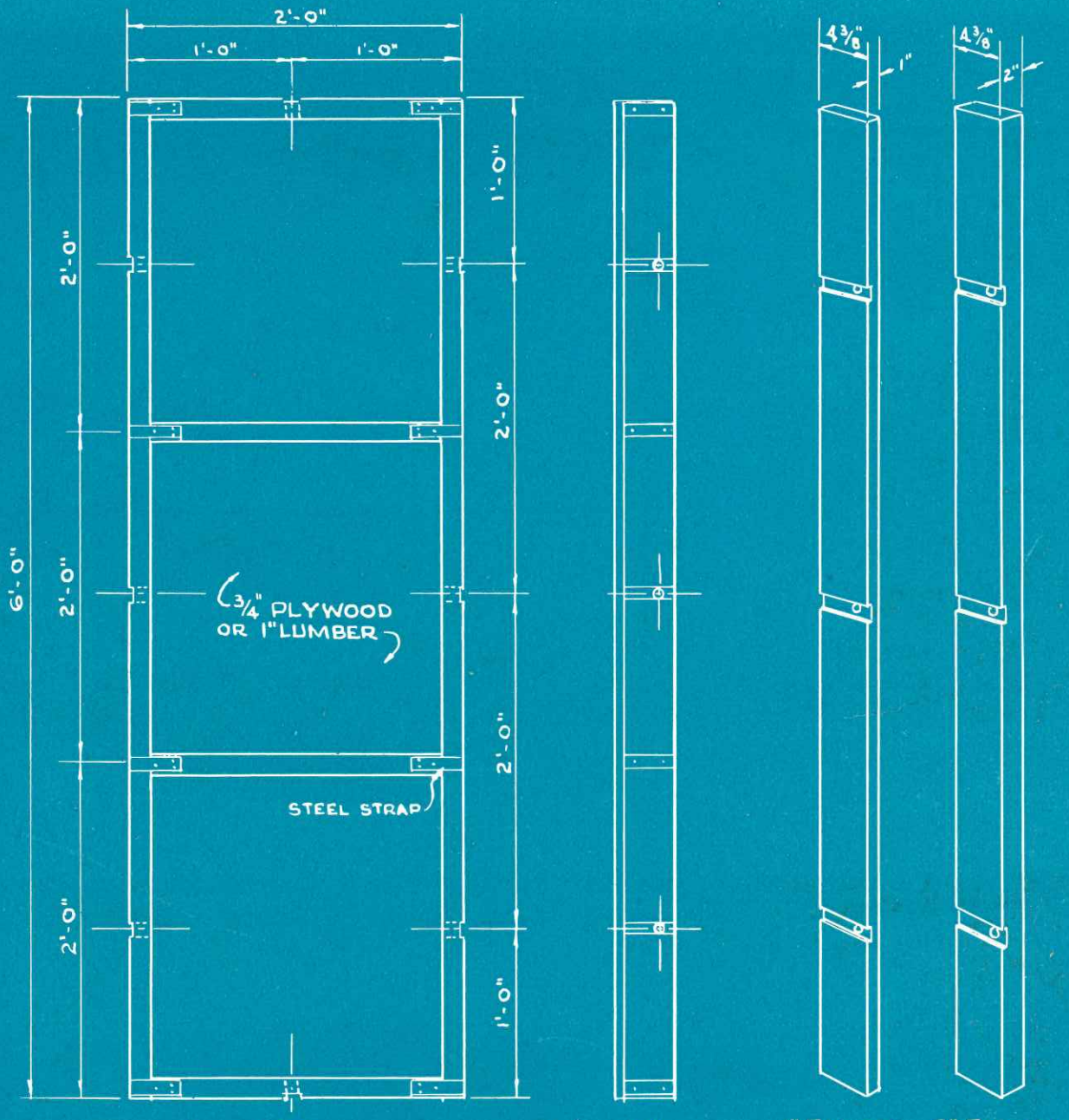


Note smoothness of walls. No rubbing, nor plastering.



Inland Construction Company, *General Contractors.*
Woolworth Store, Chicago

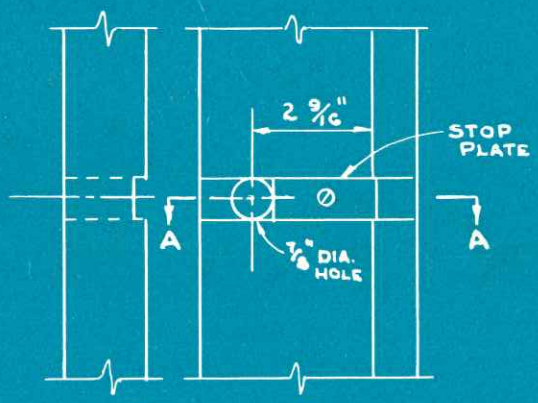
Same job as above. Forms removed.



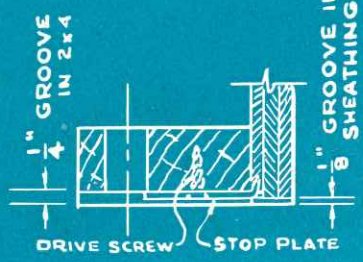
2' x 6' PANEL

SIDE VIEW

1" FILLER 2" FILLER

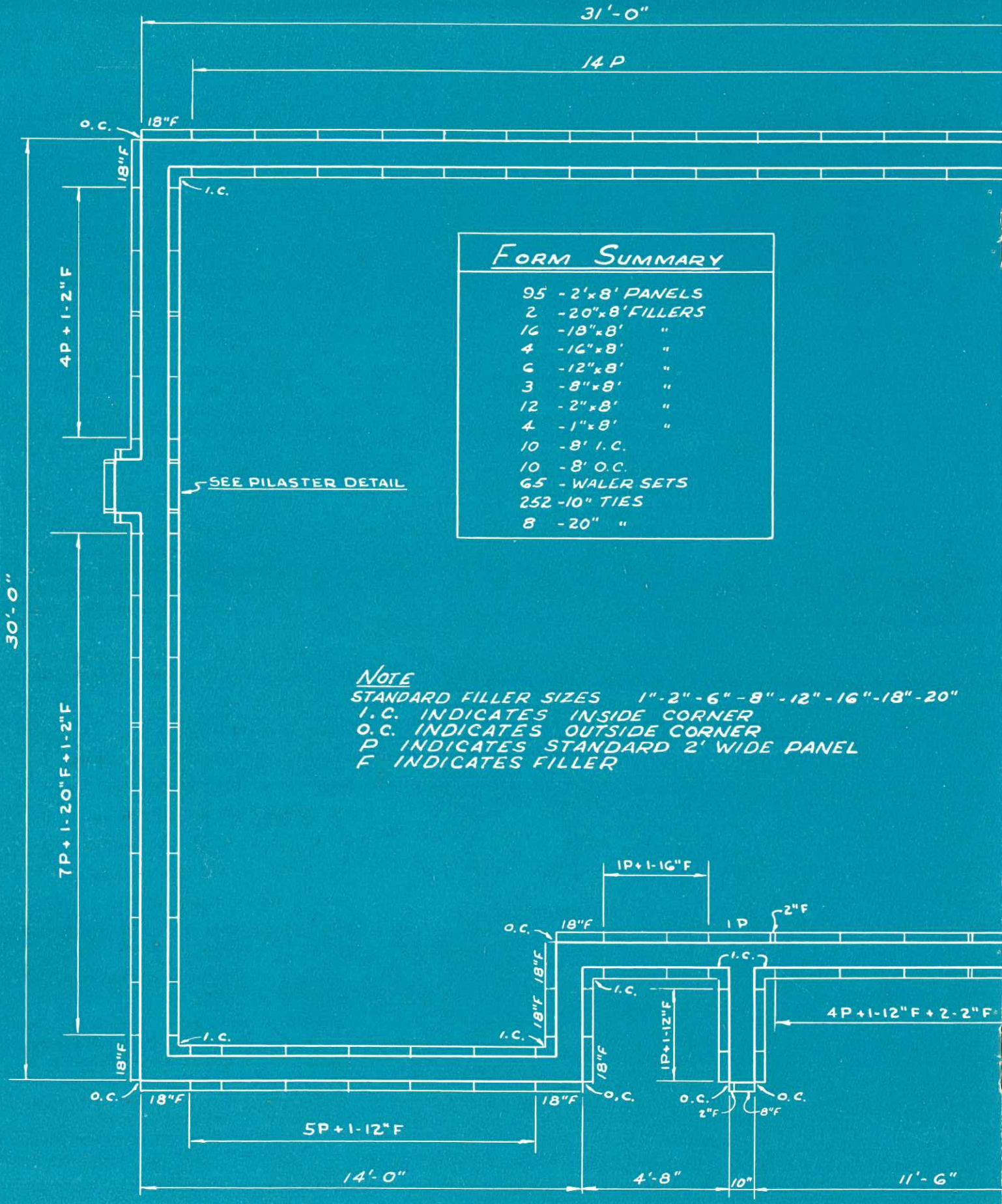


DETAIL OF GROOVE & HOLE



SECTION A-A

STOP PLATE



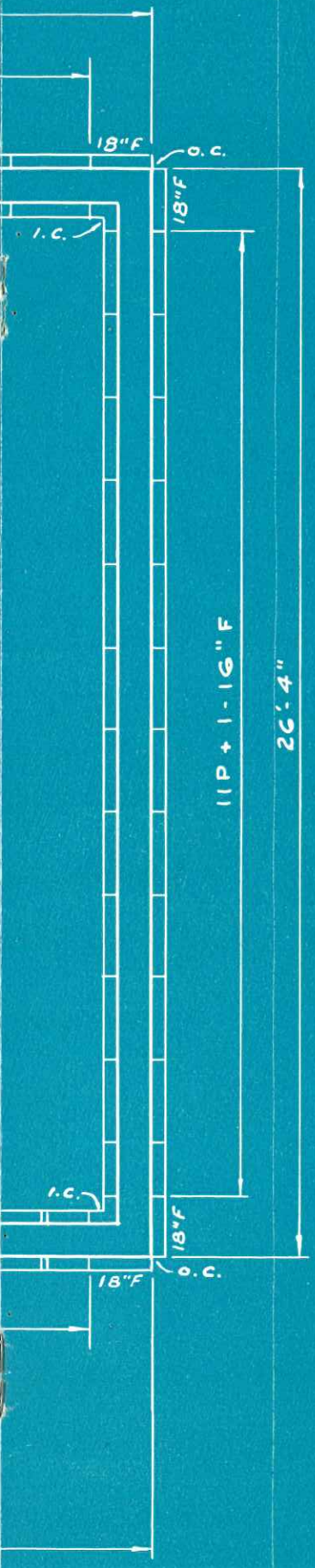
Form Summary

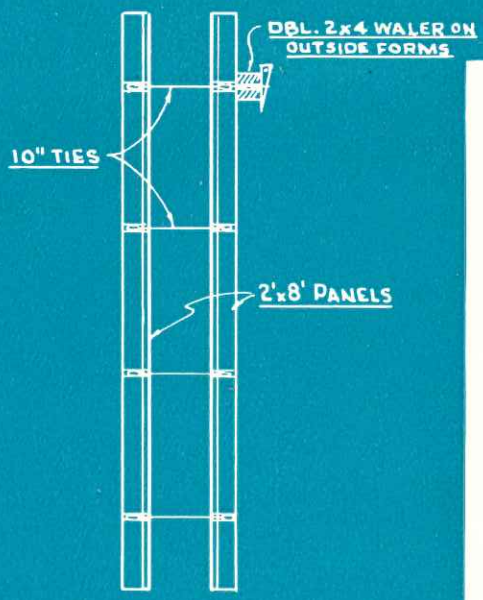
95	- 2'x8' PANELS
2	- 20"x8' FILLERS
16	- 18"x8' "
4	- 16"x8' "
6	- 12"x8' "
3	- 8"x8' "
12	- 2"x8' "
4	- 1"x8' "
10	- 8' I.C.
10	- 8' O.C.
65	- WALER SETS
252	- 10" TIES
8	- 20" "

NOTE

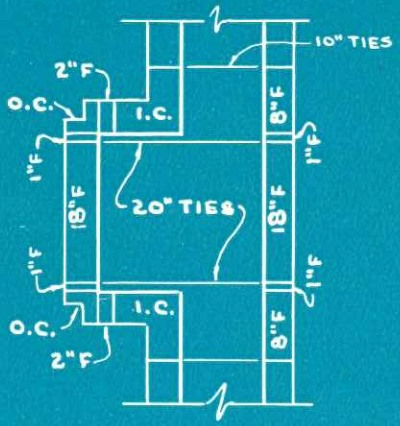
STANDARD FILLER SIZES 1"-2"-6"-8"-12"-16"-18"-20"
I.C. INDICATES INSIDE CORNER
O.C. INDICATES OUTSIDE CORNER
P INDICATES STANDARD 2' WIDE PANEL
F INDICATES FILLER

Panel Form Layout

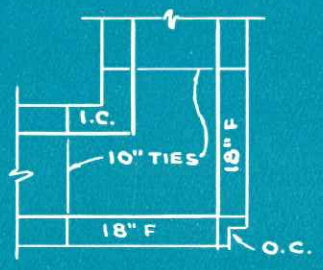




SECTION A-A



PILASTER DETAIL



CORNER DETAIL

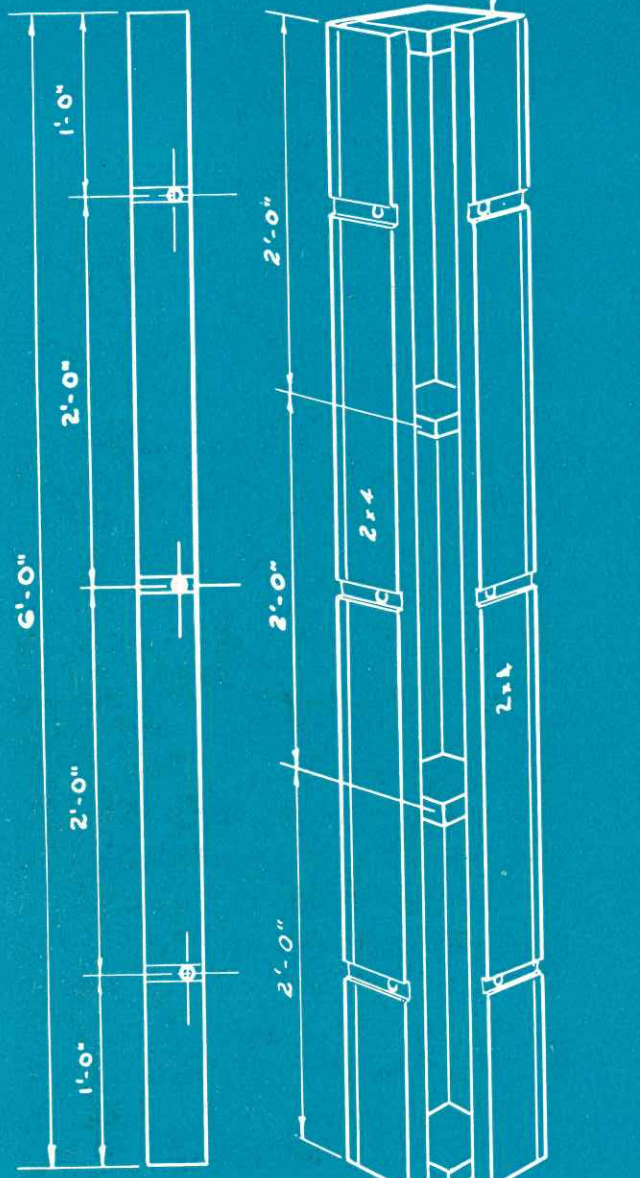
This layout illustrates the number of widths of panels and fillers required to form this foundation. To figure the form requirements on a stretch of wall, 16" would be subtracted from the inside dimension of the wall, (standard inside corners are 8" wide times 2 equals 16"), and the difference would be divided by 2 to get the number of 2' wide panels. The remainder would be made up with fillers. (See note on layout for filler sizes). The outside wall forms are same as inside, except that you add filler for wall thickness at each end; see page 8.

This layout illustrates the number and widths of panels and fillers required to form this foundation. To figure the form requirements on a stretch of wall, 16" would be subtracted from the inside dimension of the wall, (standard inside corners are 8" x 8"), and the difference would be divided by 2 to get the number of 2' wide panels. The remainder would be made up with fillers. (See note on layout for filler sizes.)

The forms for this house foundation were set up and ready for pouring in 26 man hours. The forms total 2053 square feet and were set up at a cost of $52.00, or about 2½c per square foot, figuring labor at $2.00 per hour. The superintendent had all of the forms on hand, and with the layout, the forms were efficiently erected. Furthermore, in our system you have none of the following.

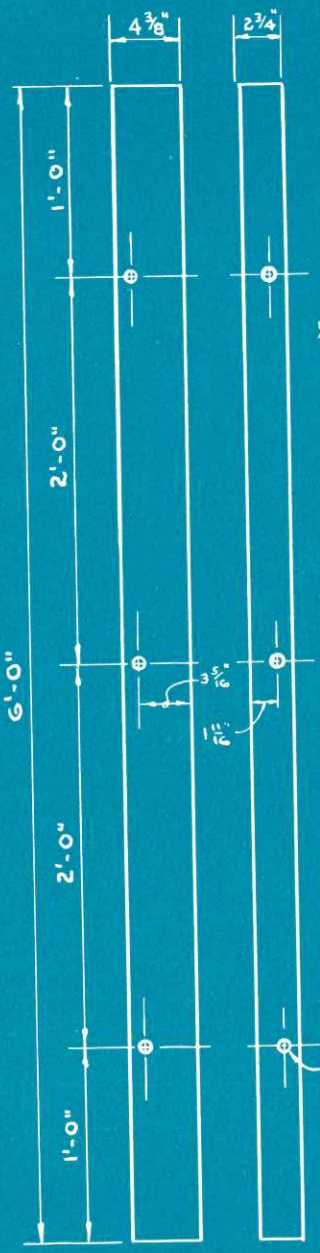
1. Driving nails to hold adjacent panels together and, after pouring, the removal of these nails.
2. Drilling holes for ties.
3. Plugging up of old tie holes.
4. Fishing through the form for tie openings.
5. Measuring and cutting of band iron.
6. Nailing of band iron ties to the forms.
7. Making, placing, and removing wood spreaders.
8. Placing more than one waler per wall.
9. Measuring and squaring of corners.
10. Forcing out of forms when stripping against resistance of band iron or spreader ties.
11. Covering of marks in concrete left by band iron or by washer spreaders.

Your draftsman can easily make a layout for your job similar to the one here shown. You use this layout in placing your order. It gives you the information as to the number of standard panels the job requires, and also the number and size of the fillers and corner pieces. Upon request, we will furnish you with a layout for your job. This without charge or obligation, for if you use our forms, we want you to have the full savings which their proper use will give you.

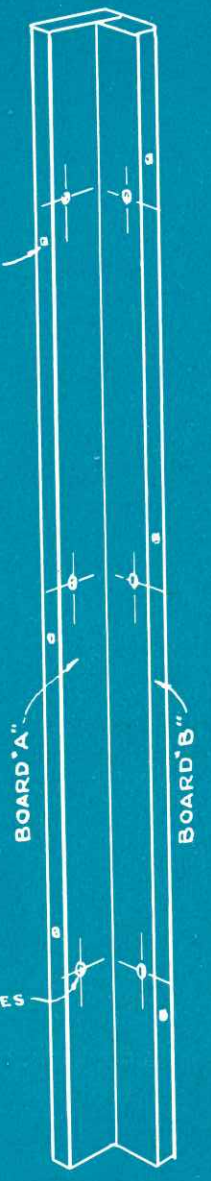


2 x 4

INSIDE CORNER ASSEMBLED

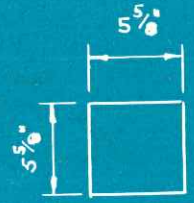


BOARD "A" BOARD "B"



OUTSIDE CORNER ASSEMBLED

NOTE- ABOVE DETAILS ARE FOR 6' CORNERS. 4' & 8' CORNERS ARE SIMILAR WITH THE SAME SPACING FOR GROOVES & HOLES.



DETAIL OF BLOCK FOR INSIDE CORNER

PLAN OUTSIDE CORNER

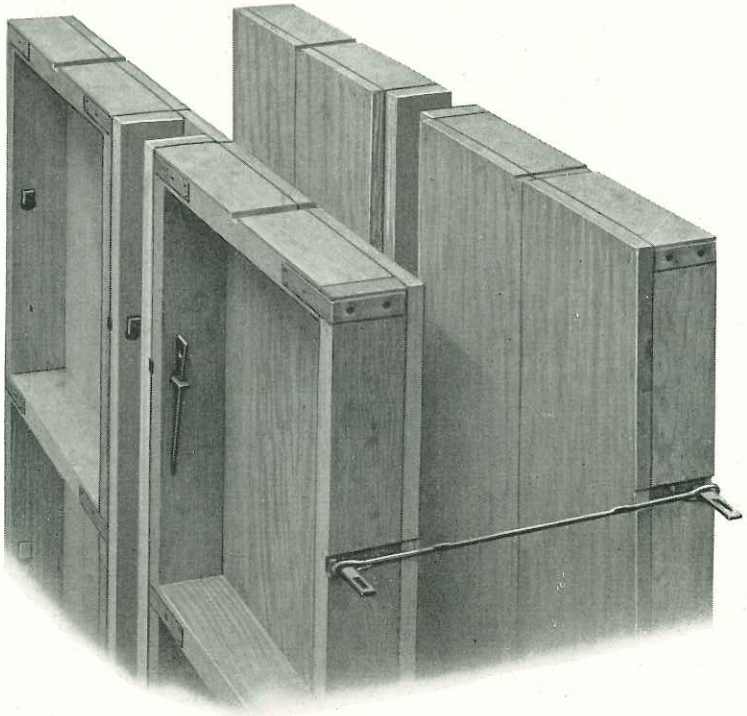
SYMONS CLAMP & MFG. CO.

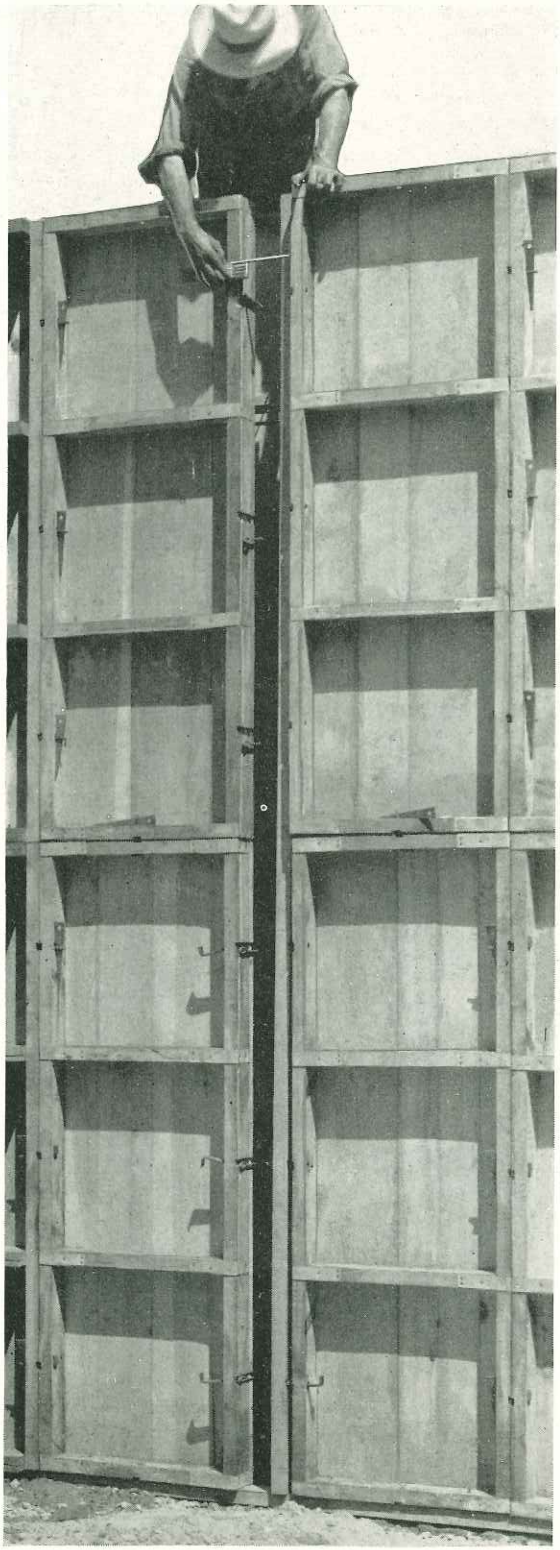
4249 DIVERSEY AVE. - CHICAGO, 39

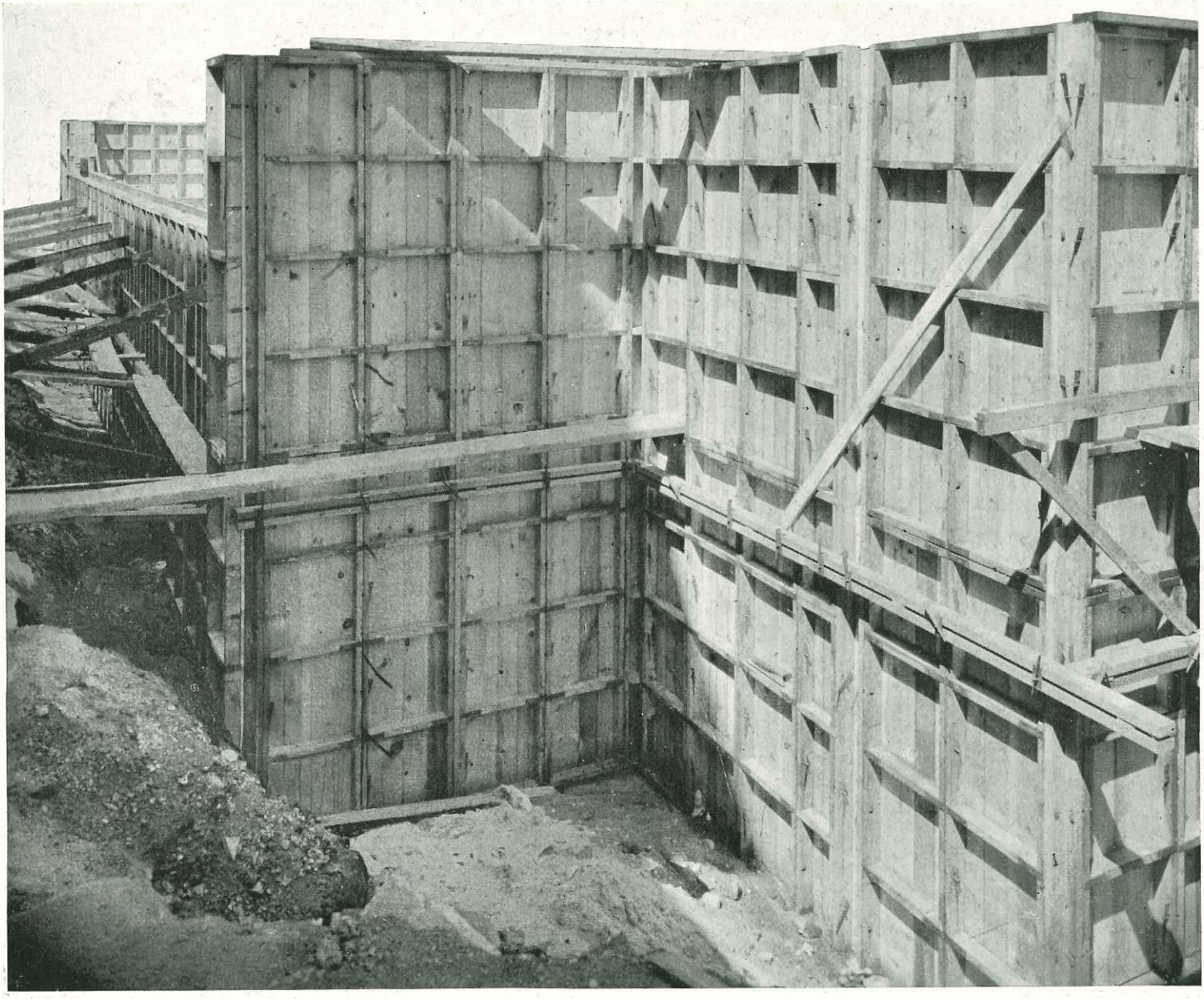
The small fillers 1" and 2" are quite essential on the job and at least one should be inserted between panels on even a short stretch of wall, this for the reason that when your panel forms become swollen by rain, or by the wet concrete, they will run slightly over the dimensions shown on the blueprint. In this case you take out this filler, or if a 2" filler substitute a 1". It is of little bother to put a small filler between panels and it is economy in the end.

These panel forms, being wood, small fillers, less than 12" in width are easily made on the job. Take two pieces of 2 x 4's, bore holes to correspond with connecting bolt holes in panel forms. When set in place there is provided ledges or shoulders to which is nailed a 1" board of proper width, see sketch below.

In setting up these forms, you start with the corners and pilasters, if there are any pilasters, and work toward the middle the same as with any other forms. You know from the blueprints what fillers are required in any stretch of wall, this being ascertained by first subtracting for corner pieces, Fig. 1, page 8, plus wall thickness for outside, then dividing the length of the stretch in feet by 2 which gives the number of standard panels 2' wide; the balance expressed in inches represents the space to be filled in by fillers. Also on page 8, we get various combinations of fillers for almost any space. As stated above, it is always advisable to work in at least one small filler in any stretch of wall, this for adjustment in meeting dimensions; also it is advisable to distribute the fillers, not place them all together.

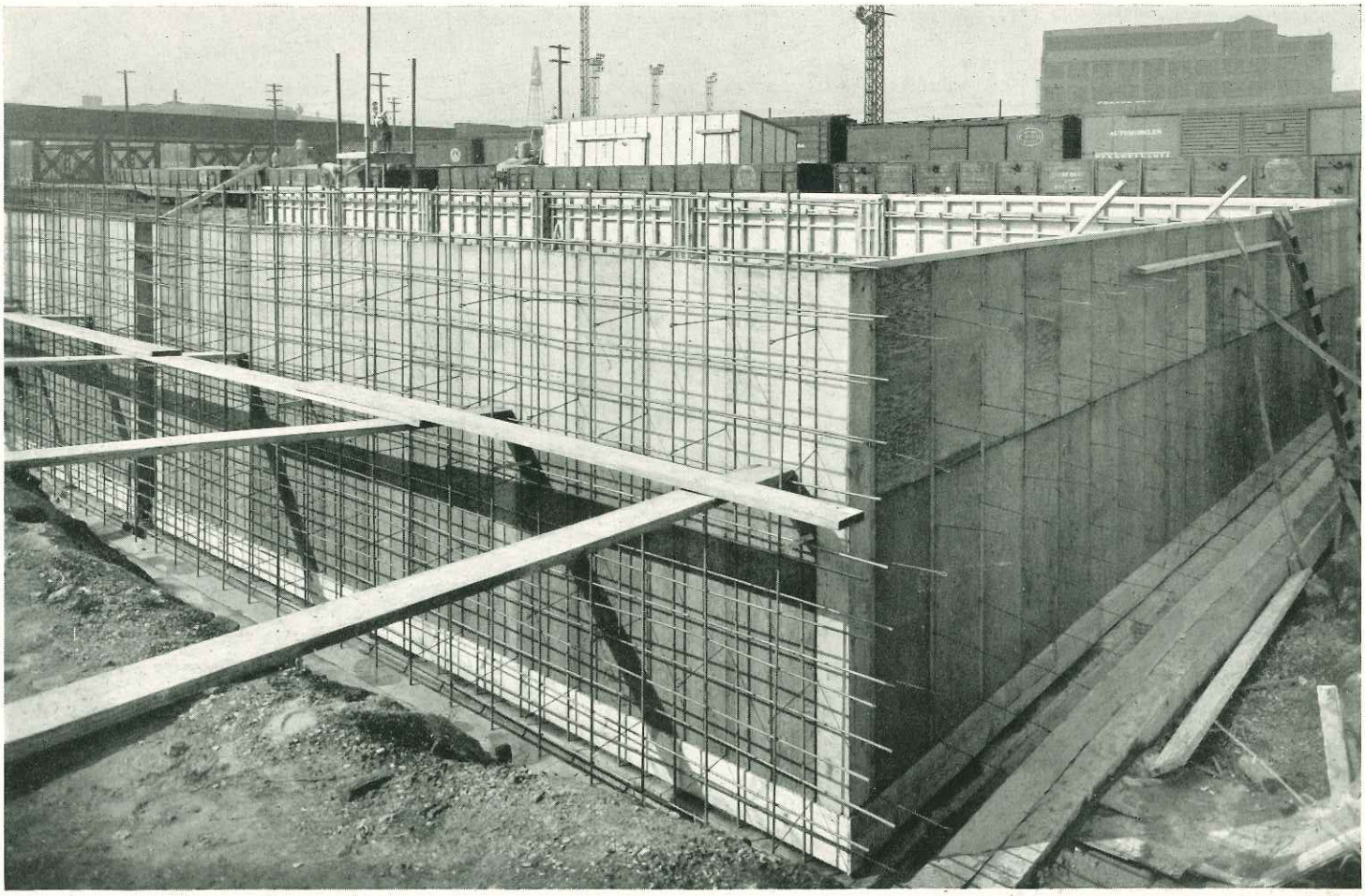


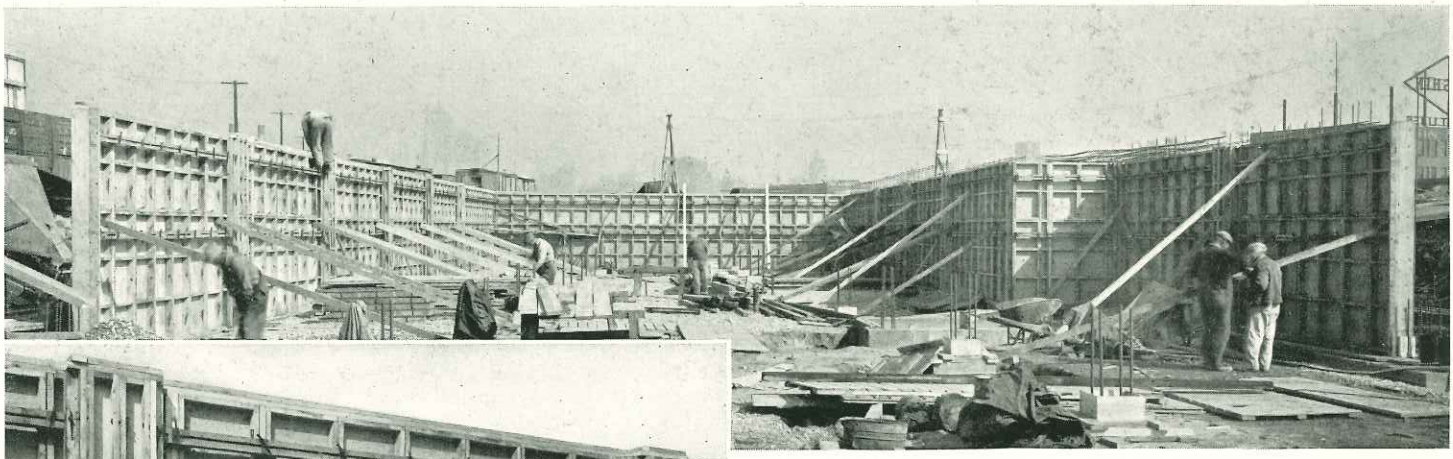


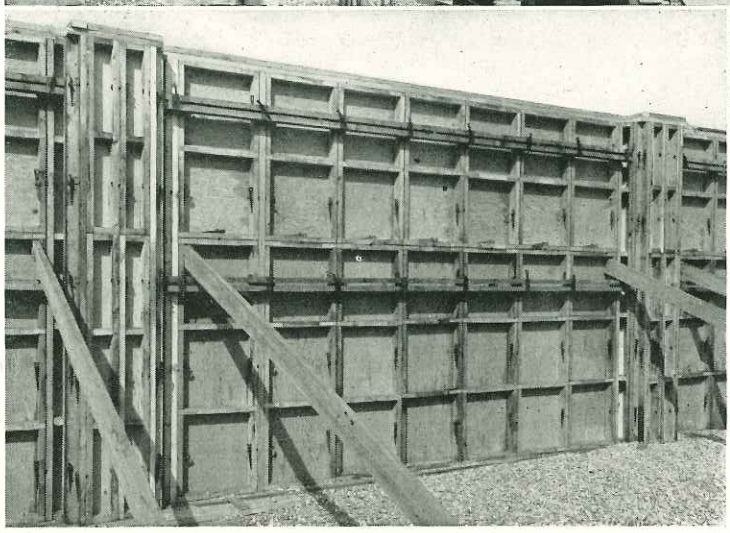


Our Lady of Guadalupe School — Frank Burke & Son, *General Contractors.*

Wall 16' high, one waler—note how this contractor makes his own filler on right as per method page 20—the fabricated 2 x 4 pieces may be bought from us at 10 cents per running foot; same pieces may be used singly for a 2" filler by nailing on a ¾" strip of plywood or 1" board making a filler 1⅝" x 4⅝".

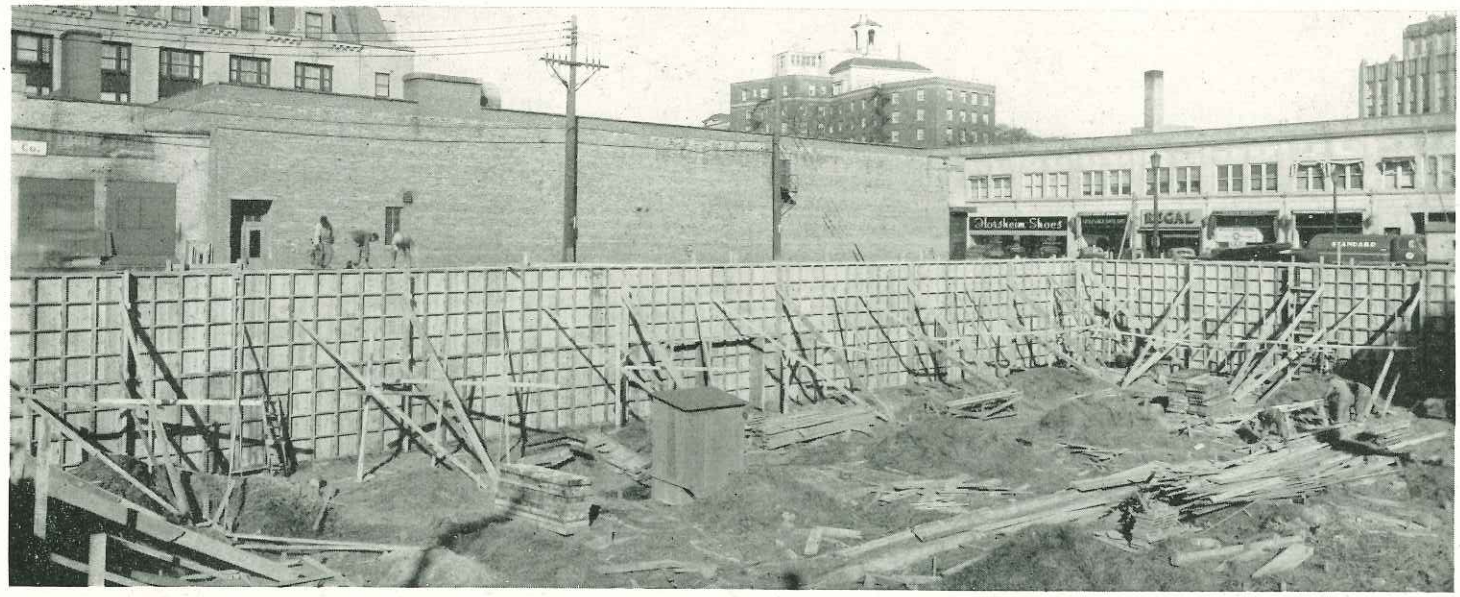




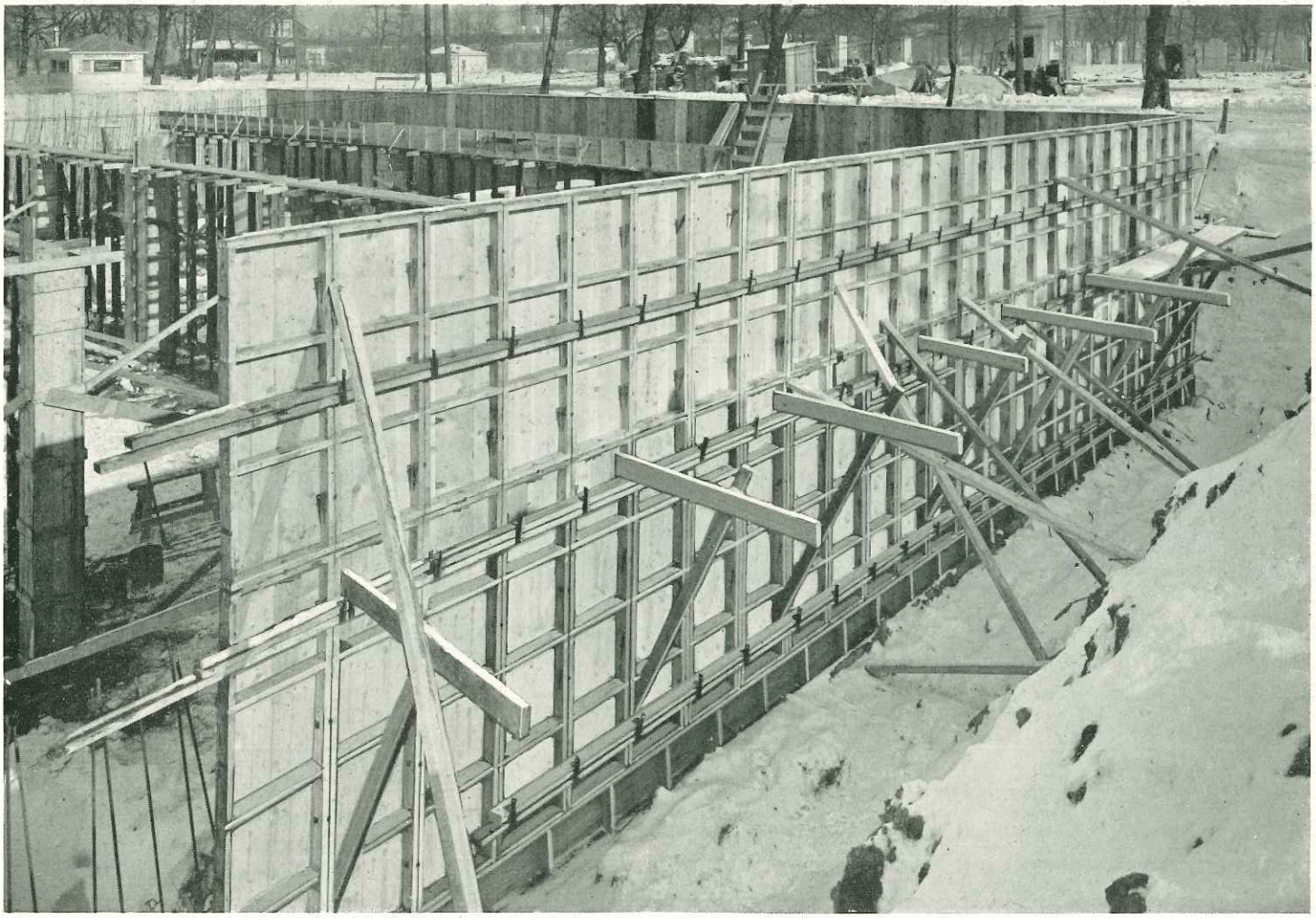


PENNSYLVANIA R. R. WAREHOUSE

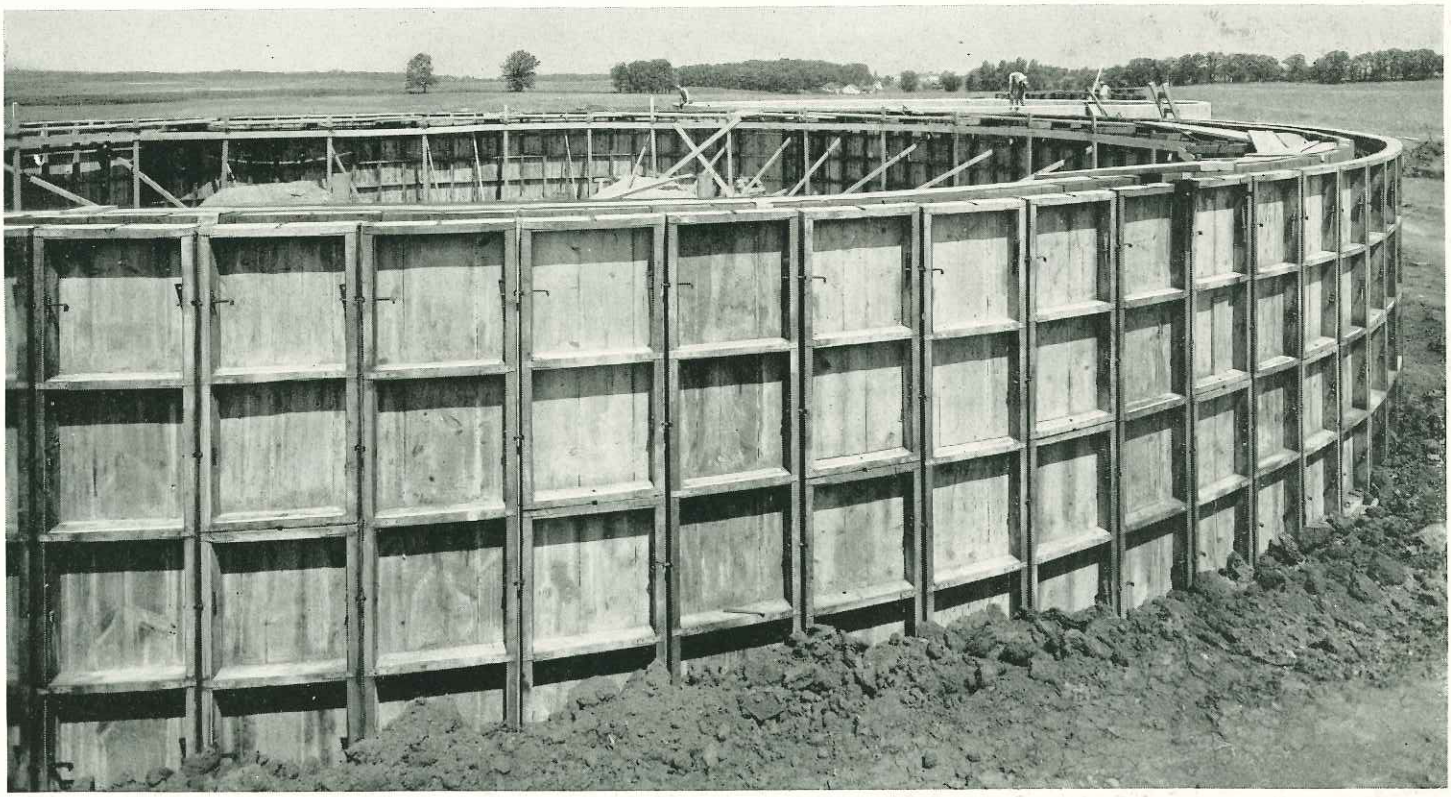
Chas. B. Johnson & Son, *General Contractors.* Top photo features reinforcement set in place after setting up forms on one side of wall. Center photo and photo at left feature pilasters.



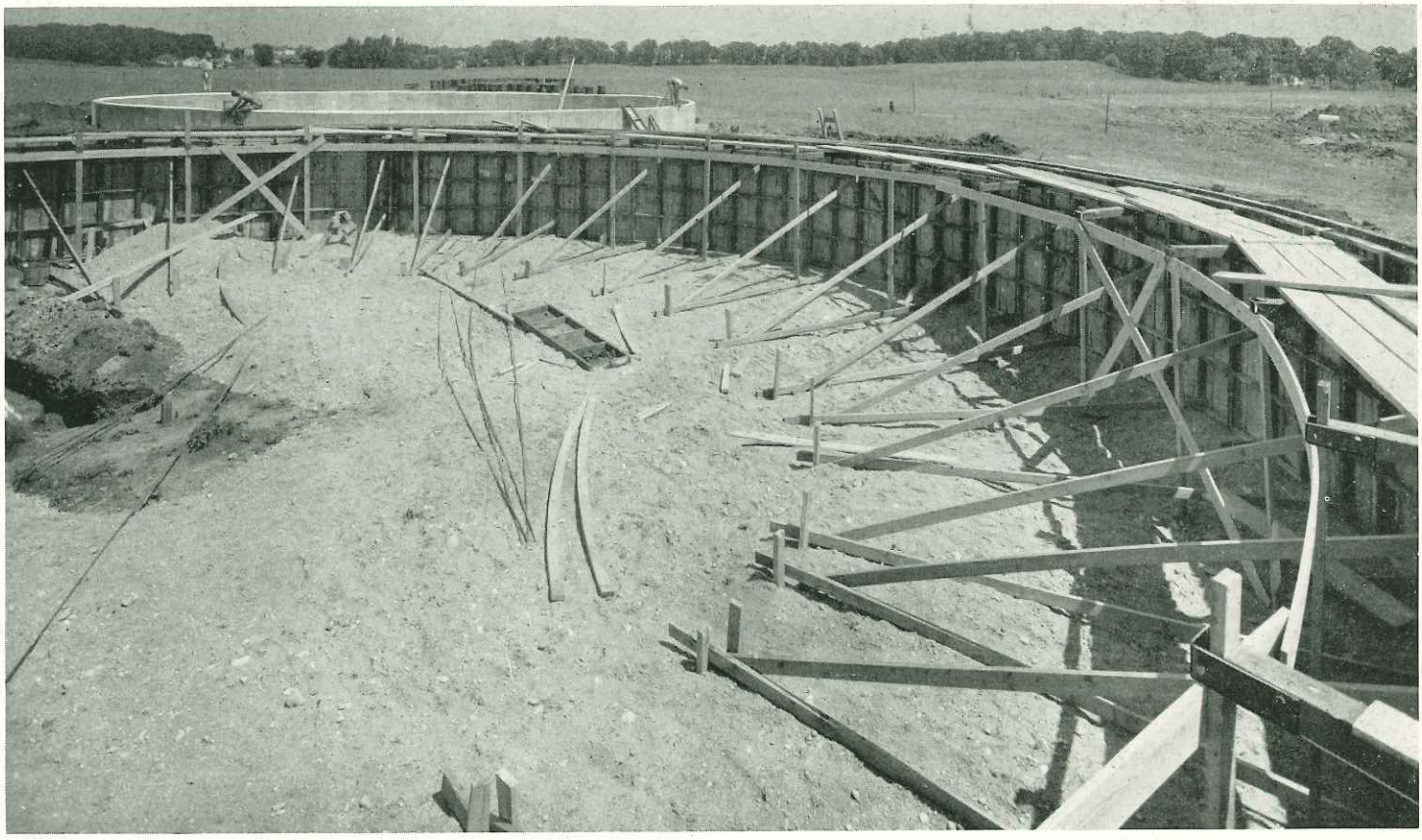
Setting up Forms, NEISNER, INC. STORES, EVANSTON, ILL.
INLAND CONSTRUCTION CO., *General Contractors*



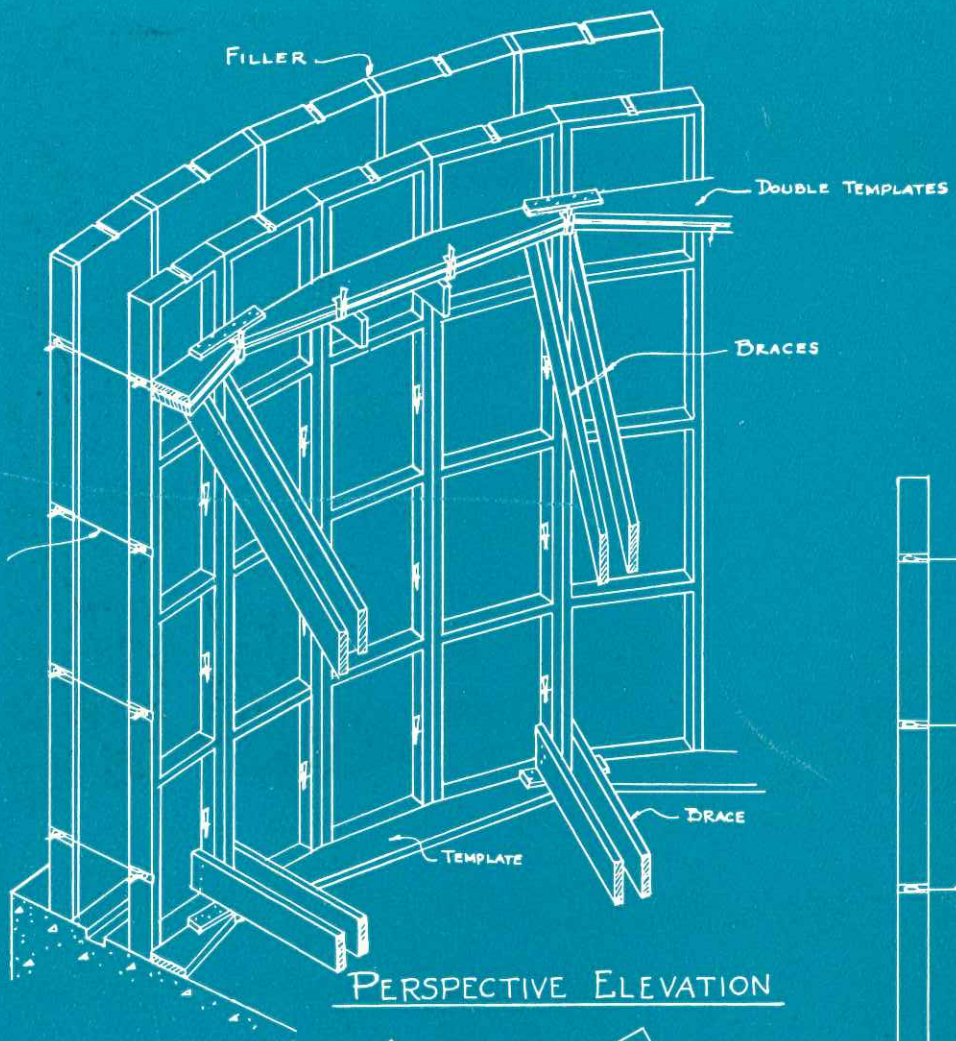
WATER WORKS, *Franklin Park, Illinois*



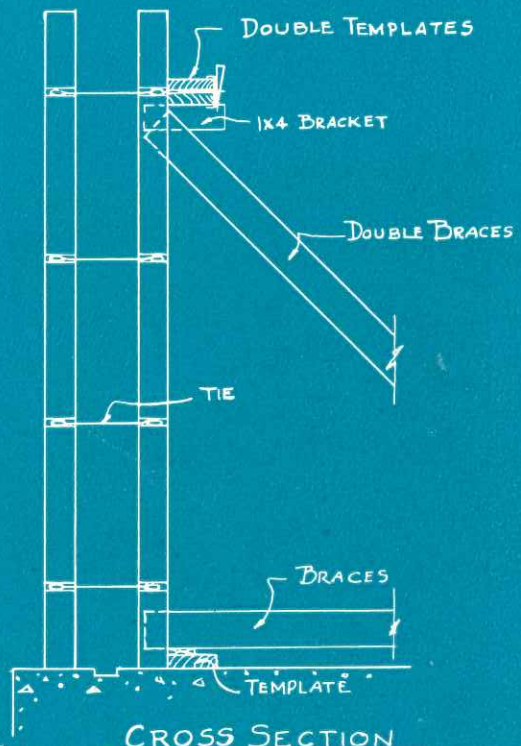
Sewage Disposal Plant—Round Lake, Illinois—Greene & Gust, *General Contractors*



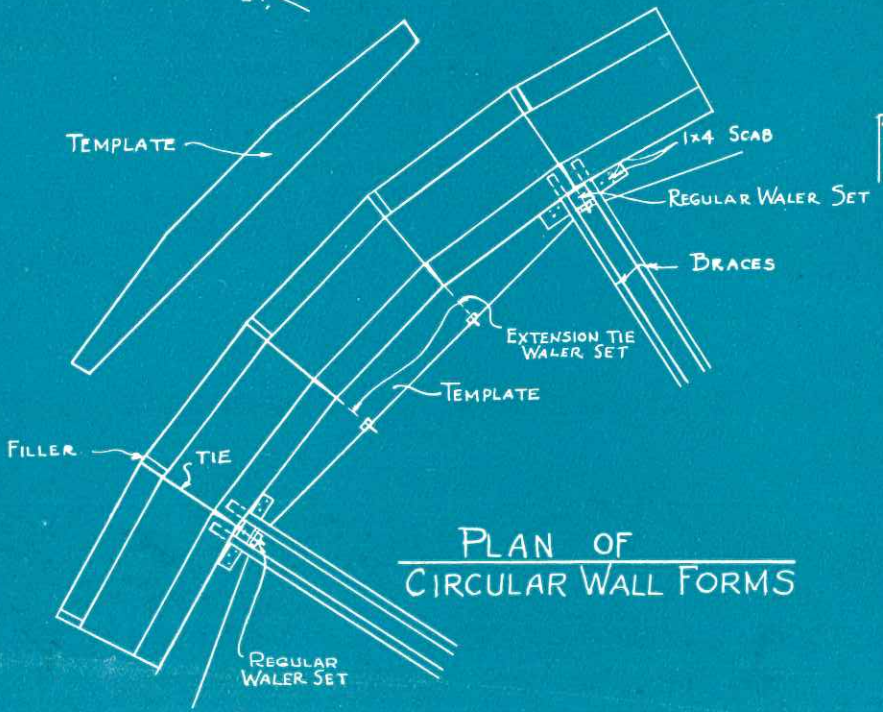
Same job as above.



PERSPECTIVE ELEVATION



CROSS SECTION

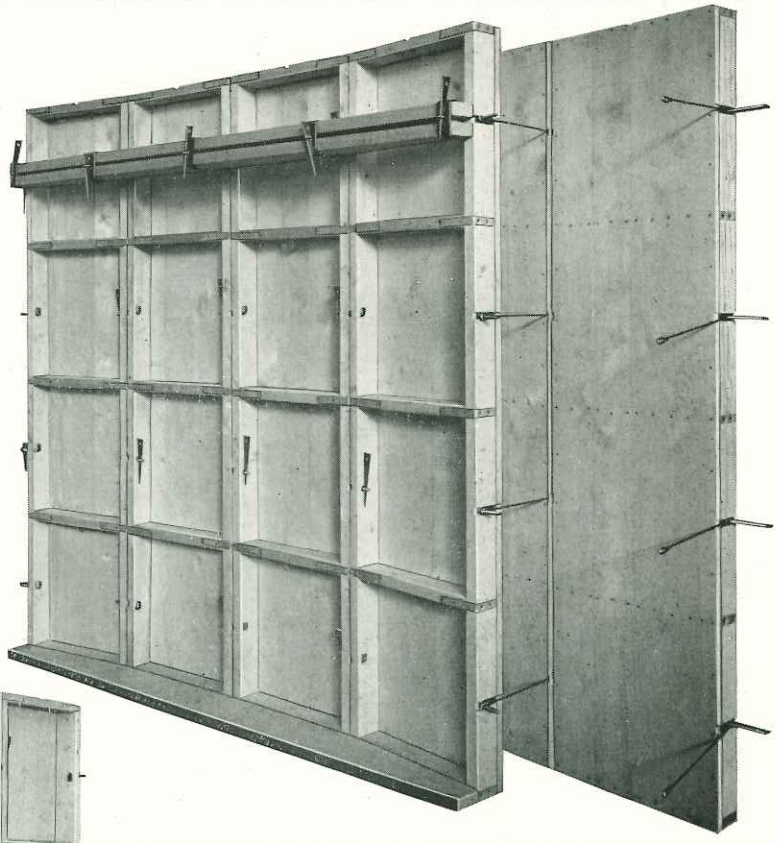


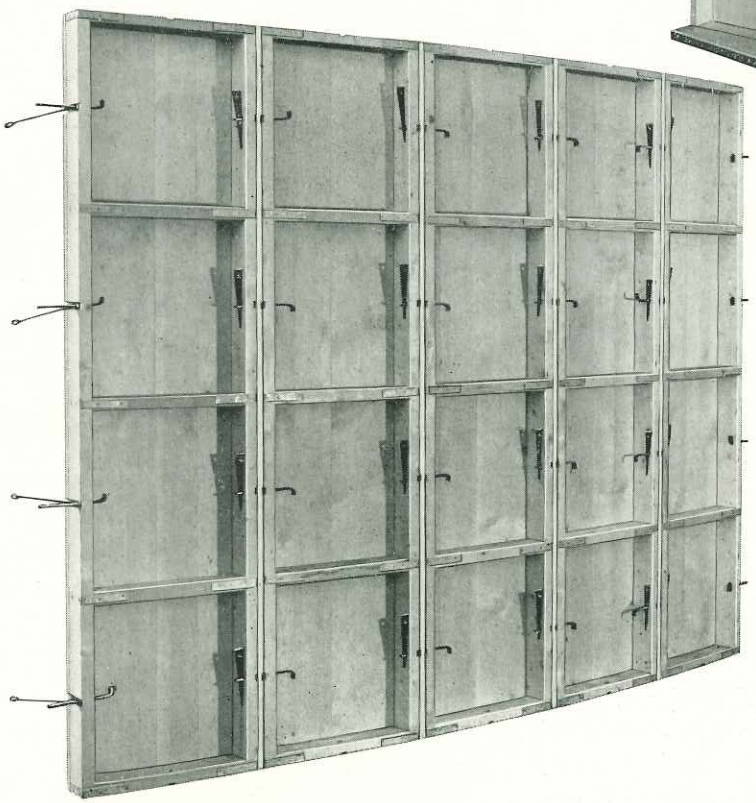
PLAN OF CIRCULAR WALL FORMS

CIRCULAR WALL FORMING DETAILS

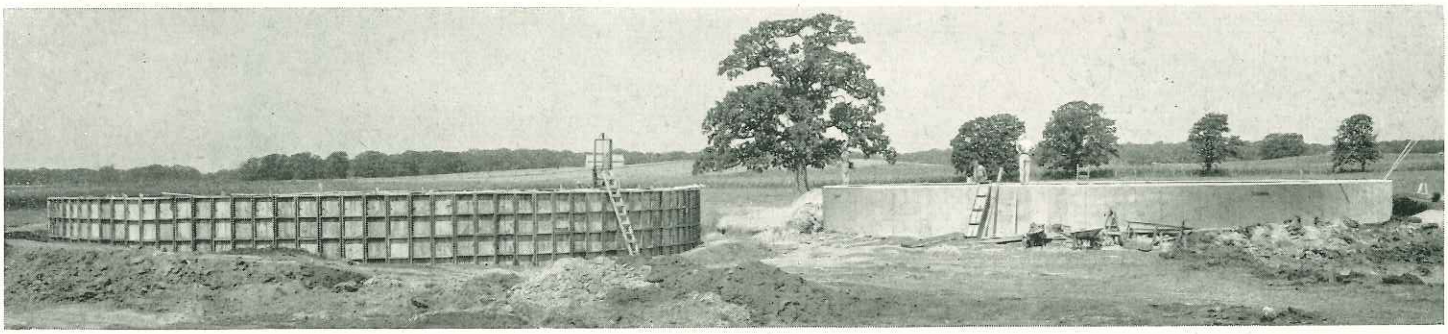
USING SYMONS SYSTEM WALL FORM CONSTRUCTION

Symons Wall Forms are particularly well adapted to circular wall construction. This, account of the way the panels are connected by wedges-bolts running through the fillers. The fillers are placed between the panels in outer side of wall, and may be of different thicknesses dependent on degree of curve to wall.

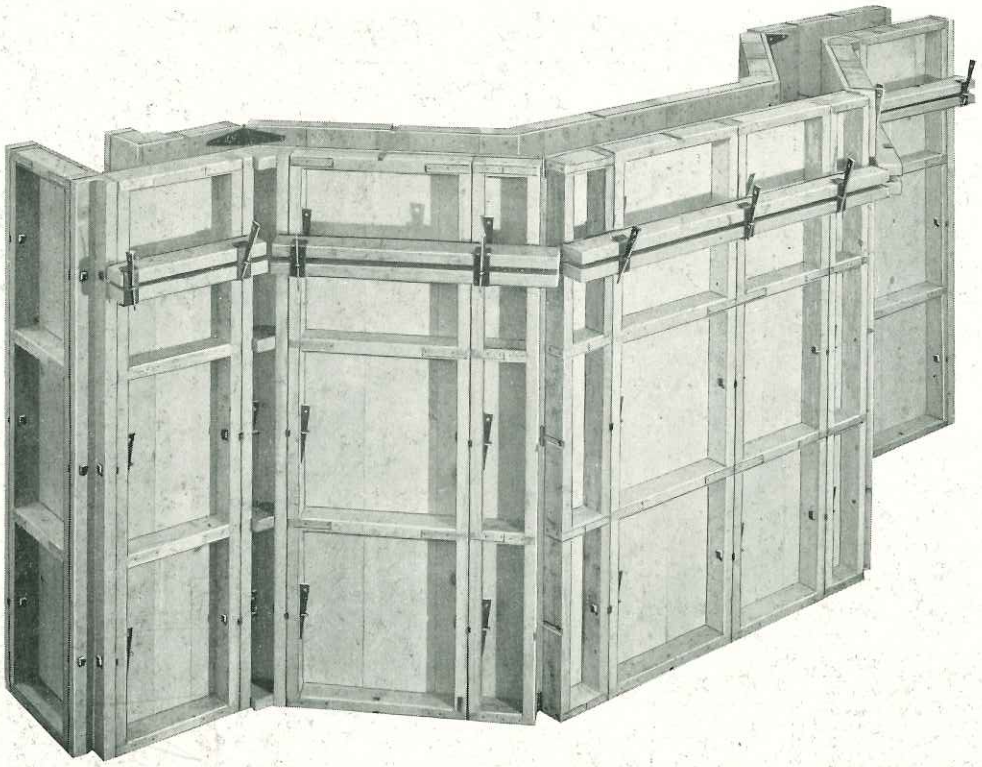




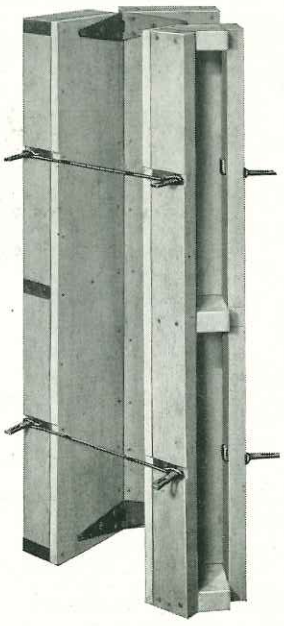
The fillers should be staggered as to length so as to make the panel forms continuous in height. For circular walls of small diameter use panels of lesser widths 16" or 12" whatever the job requires.

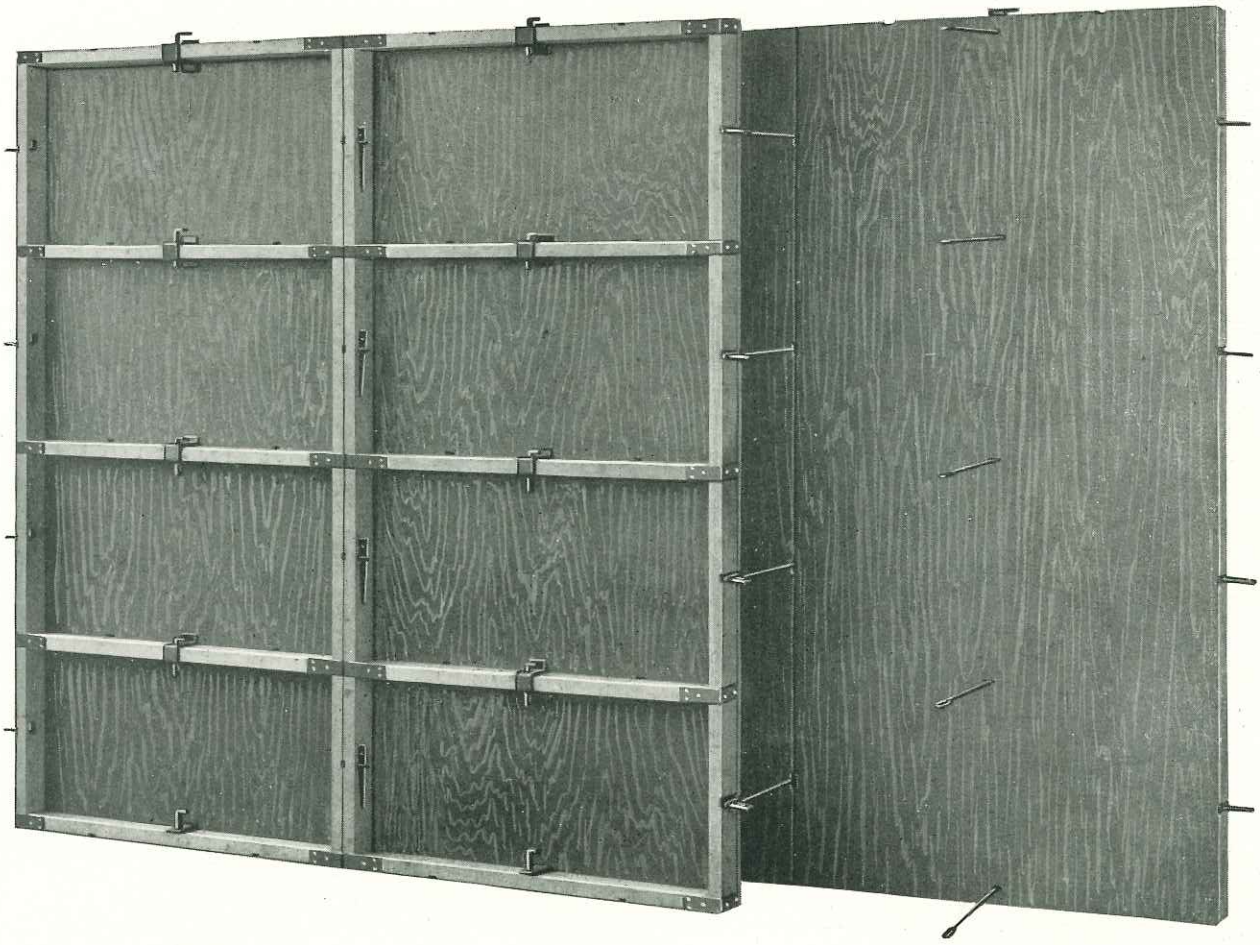


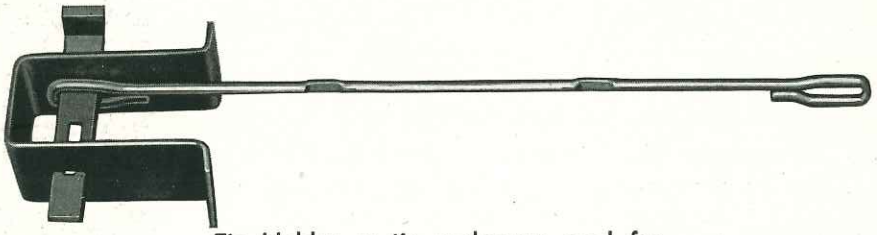
Forms for Bays are easily and quickly set up for any degree of angle.



Outside Bay Corners (Hinged) and Inside Bay Corners entirely do away with the need of sawing and cutting for the bay. These Bay Corners are standard and will fit any specifications.



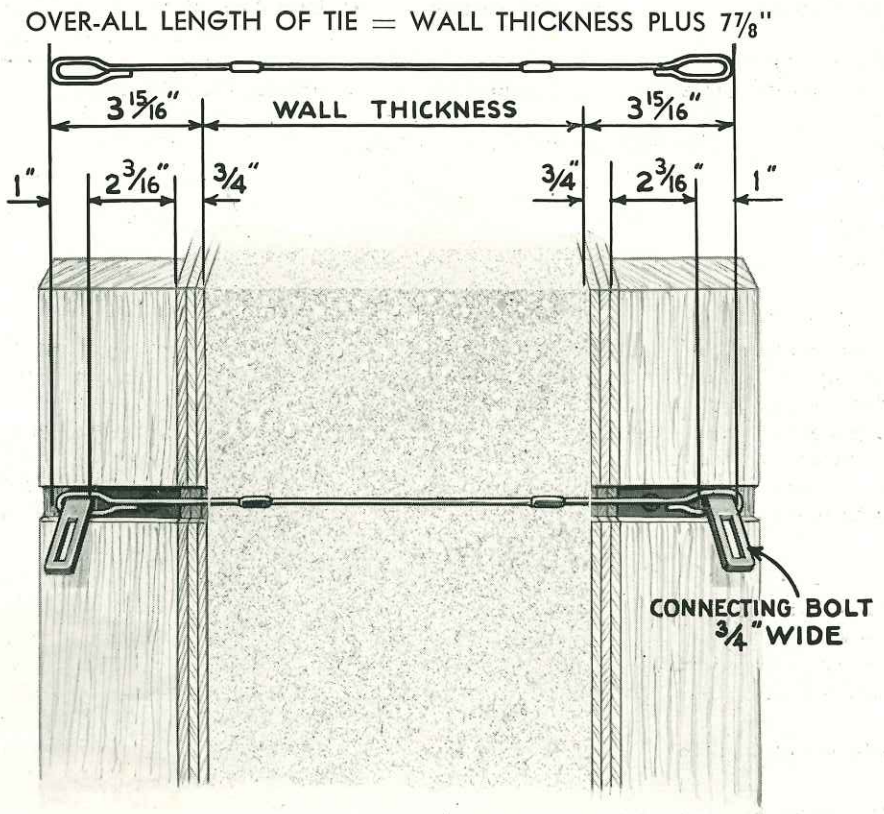




Tie Holder or tie anchorage used for midway ties in panels more than 2' wide.

If panels wider than 2' are used, a tie rod is placed midway of the panel as here shown. The ties are pushed through from either side as panels are set in place. The midway ties are easily reached from side and guided through opening in opposite panel. No interference by spacer washers as these are not required. Symons ties hold both ways.

Variation in lumber does not affect thickness of wall as anchor bolt for ties is placed a specific distance, 3⅜" from concrete surface.



WALL THICKNESS UNIFORM

VARIATION IN WIDTH OF 2 x 4 DOES NOT AFFECT THICKNESS OF WALL

Anchor or connecting bolt for loop ends is spaced uniformly $3\frac{5}{16}$" center from concrete surface. Break back point 1" to 2" from concrete surface as wanted.

Make your own panel forms. All you need in the way of tools is a table saw with dado head for cutting grooves and drill press for boring holes. You buy the hardware from us once. It doesn't wear out; use the same hardware on the next lot of forms. We furnish blue prints without charge.

You may be able to save:

1—The difference between the carpenter's scale in Chicago and what it is in your territory. In Chicago it is $2.45 per hour—1949.

2—You may save in overhead. Our overhead is estimated at 150% of the labor cost.

3—You would save our profit, be it little or big, it is something.

4—You would save freight from Chicago to your job. Sometimes this is a considerable item.

Suggestions in Placing Order

We recommend panels not over 2' wide for reasons given on page 4.

As to corners and pilasters, see pages 7 and 8. Even on a small job like a house foundation, you should have at least four of the 8" x 8" inside corners, Fig. 1, also four of the outside corners, Fig. 2.

As to hardware you will require the following number of accessories per panel:

PANEL SIZE	SHORT CONNECTING BOLTS	TIGHTENING WEDGES	U TIE HOLDERS	S TIE HOLDERS
2' x 4'	2	2	0	0
2' x 6'	3	3	0	0
2' x 8'	4	4	0	0
4' x 4'	4	2	1	1
4' x 6'	6	3	2	1
4' x 8'	8	4	3	1

All fillers and the corner panel require the same accessories as panels in the 2' width. All the above accessories are included in the price of the panels and are shipped with the panels without specifications.

In addition to the above, you will need long connecting bolts whenever 1" and 2" fillers are used, this for the reason that these bolts go all the way through these fillers and connect adjoining panels. You need two of these long bolts for every 2' in length of these fillers that you use.

As to the ties, you need one tie for every four square feet of wall, that is to say, for a wall 8' high and 20' long, you will require forty ties. As to the Liner or Waler Ties you will need one of these for every 2' in length of wale. You use the same number of Wale U Plates.

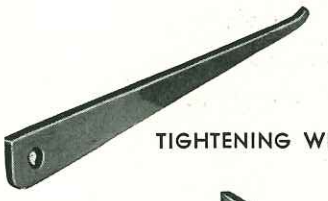
GENERAL DIRECTIONS FOR SETTING UP

Before proceeding, determine from layout just what is required in the way of panels, fillers, and corner pieces. Make sure that every part needed is on the job. This is very important and will save delays, speed the job, and lower the cost.

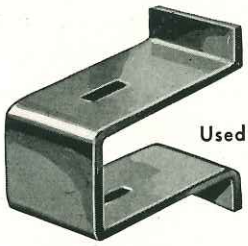
1. Oil the surfaces of all panels and fillers—any thin oil.
2. Erect corner panels as per instructions on Page 8. Plumb and brace. From the corners, work toward the center with one side of the wall forms, running the connecting bolts through loop ends of ties.
3. Walers are used for alignment only; one near top of one side is usually all that is needed. The waler tie is slipped over the connecting bolt before inserting wedge. However, the wales are not put on until after one side is erected.
4. After reinforcing steel has been placed, and frames, boxes, inserts, sleeves, etc., have been installed to the one face of the wall forms, erect the opposite face of the wall.
5. 1" and 2" fillers may be made on the job. The 2" by ripping 4⅜" off a 2" board. A 1" filler is made by ripping 4⅜" off a 1" board. It is very easy in a stretch of wall to determine what fillers are required. See blueprint pages 17 and 18.
6. On page 7 we show two methods for making Pilaster.

Important—Do not throw panels out of alignment by driving wedge through connecting rod too tight—leave loose. Usually drop in, not drive in.

HARDWARE FOR SYMONS FORM PANELS

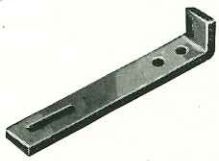


TIGHTENING WEDGE

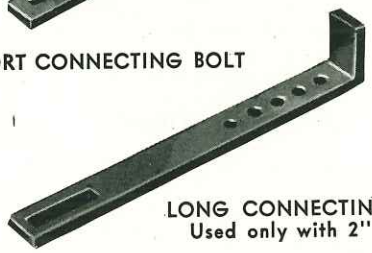


TIE HOLDER
Used only in panels 4' wide

LINER OR WALE U PLATE



SHORT CONNECTING BOLT

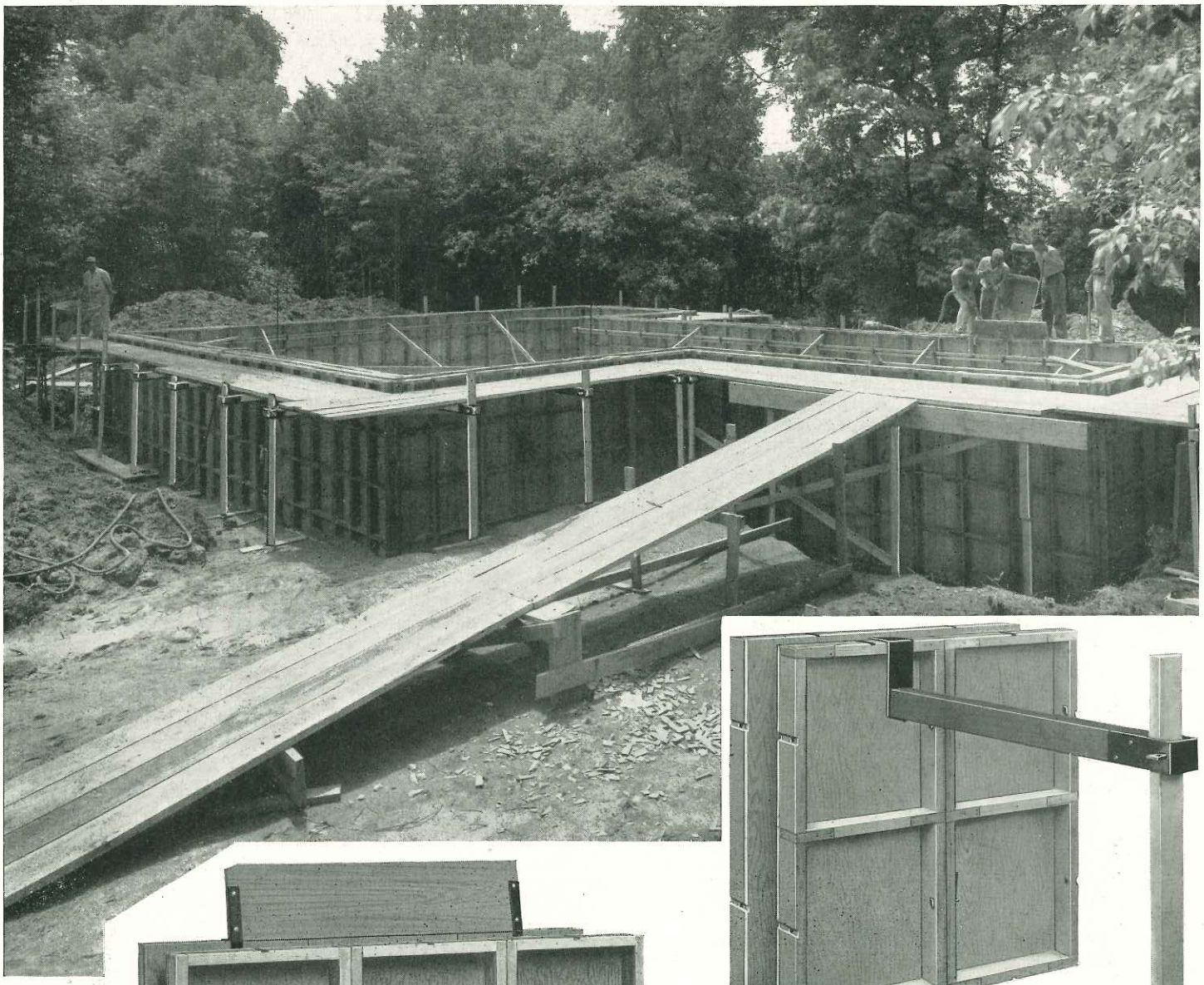


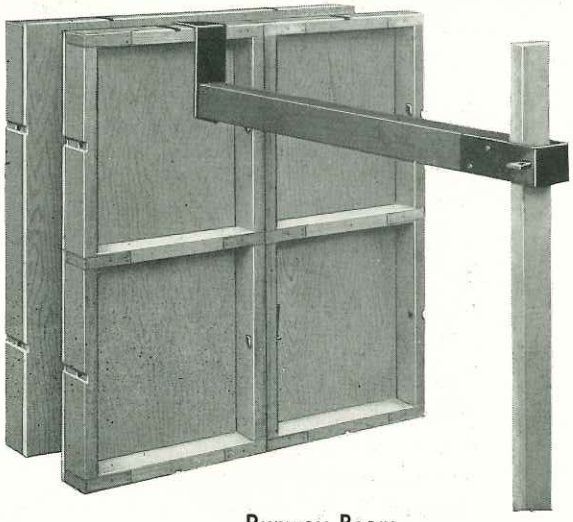
LONG CONNECTING BOLT
Used only with 2" fillers

STEEL STRAPS
(Galvanized Reinforcing Bands)

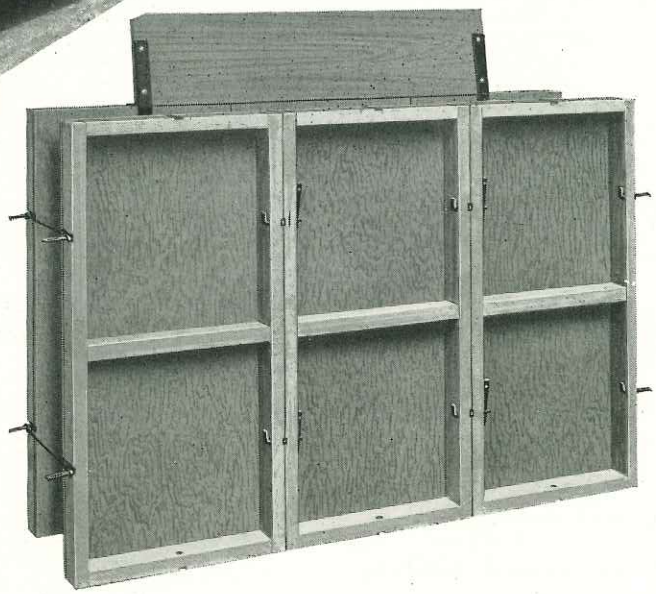
STOP PLATE

LINER OR WALE TIE





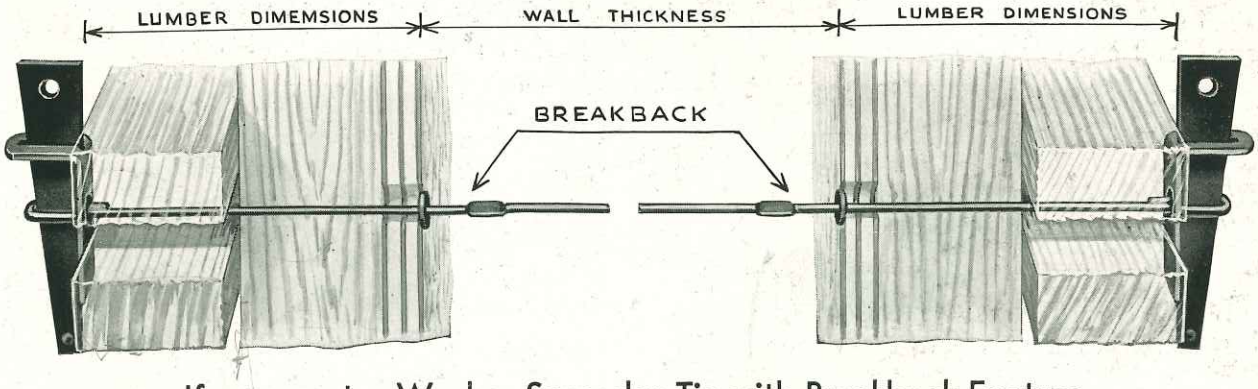
Runway Beam



Splash Board may be moved from place to place, no nails or other fastening. Slides along on top of forms.

Inexpensive accessories that save money and expedite the job.

SYMONS WASHER SPREADER TIE



If you want a Washer Spreader Tie with Breakback Feature to be used with Walers, we have it and the Best there is. Here are some exclusive features:

1. Welded loop ends.
2. Easy and accurate Breakback without bending and without special tool.
3. Washer spreader that turns freely on tie allowing easy and accurate breakback.
4. The tie breaks back perfectly without removing forms and without tools of any kind. Just loosen wedge and give tie holder a half turn.
5. There are no protruding ties to interfere with stripping.

In Stock

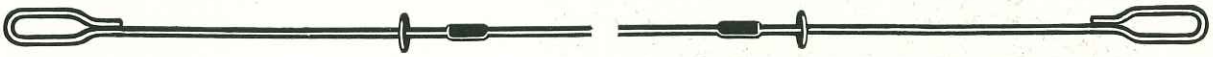
These Spreader Ties are stocked in all even inch wall thickness up to 20".

In ordering give wall thickness and overall lumber dimensions as per above sketch. Fractional wall thickness and lumber dimensions other than standard are made to order.

The tie is made of No. 4 high carbon spring wire and has a tensile strength of over 4000# and a safe working load of 3000# The spreader washer is ¾" in diameter and will easily pass through a ⅞" hole.

The anchor bracket has adjustment wedge that cannot become detached. The bracket has large bearing surface and will not bite into the wood.

The wedge is of hardened steel. Is easily removed from the loop end of tie or loosened and while in loop end given a quarter turn effecting accurate break back without removing the forms. The wedge has plenty of take up for scant or irregular lumber.

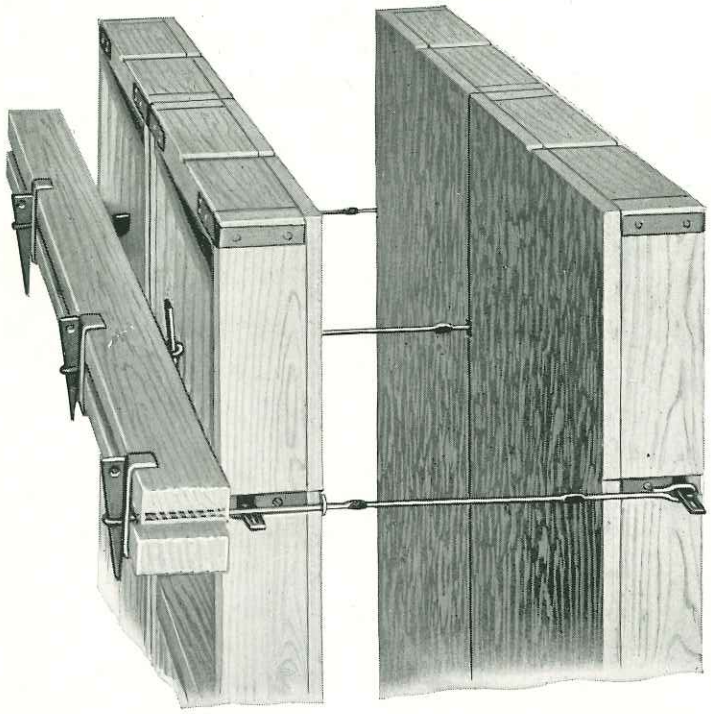


SYMONS STANDARD WASHER SPREADER TIE — OUR NO. 1.

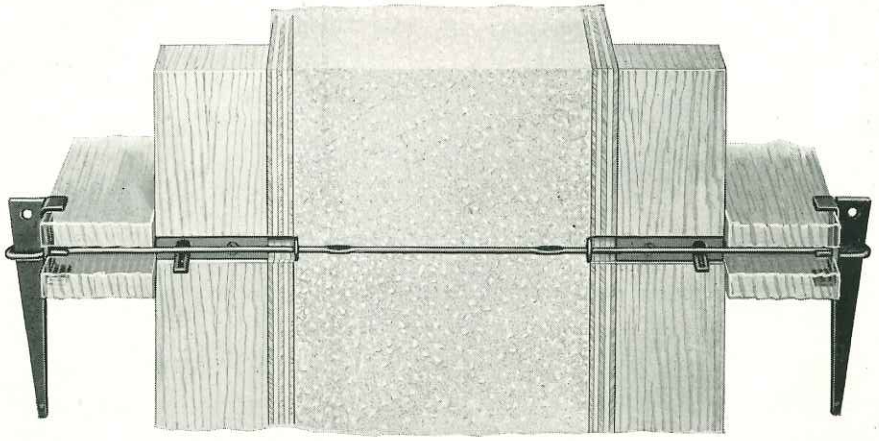
AT 50° TEMPERATURE				FOR ¾" SHEATHING, 2x4 STUDS, DOUBLE 2x4 WALES	AT 70° TEMPERATURE			
2'	3'	4'	5'	Rate of Pour (Vertical Feet per Hour)	2'	3'	4'	5'
22"	20"	18"	16"	Stud spacing for safe value of sheathing	24"	22"	20"	18"
30"	28"	26"	25"	Wale spacing for safe value of studs	33"	30"	29"	28"
32"	28"	24"	20"	Tie spacing for safe value of wales and ties	36"	33"	28"	24"

NOTE: When concrete is mechanically vibrated, reduce spacings approximately 15%.

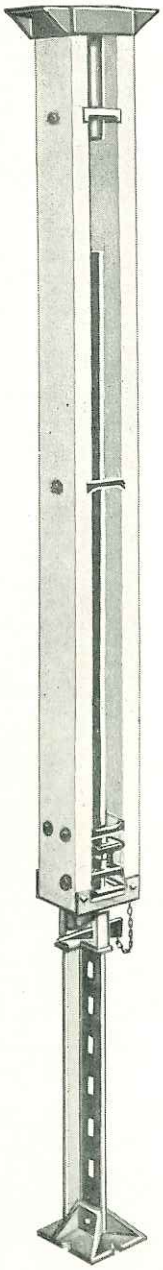
- Symons Washer Spreader Ties may be used with Symons Panel Forms with waler on one side only, as per sketch at top, or with waler on both sides as per sketch at bottom. These ties are our No. 2 top, No. 1 bottom.



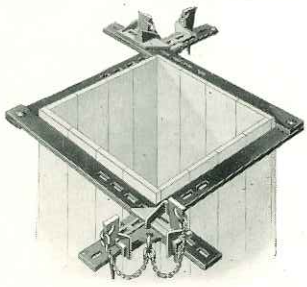
The tie rods being anchored from the side; remove connecting bolts and panels may be lifted straight up. No interference by protruding ties.



- The "U" Wale Plate as is used on Symons Panel Forms may also be used as anchor bracket for Symons Washer Spreader ties as per above illustrations. This construction has the added advantage of providing a rest for the lower member of the wale (2 x 4 member) while wedge is being inserted through loop of tie.



Symons Safety Shore



Symons Eversquare Column Clamp

SYMONS Building Products are recognized as standard equipment the country over. You will find Symons Safety Shores and Symons Eversquare Column Clamps on almost every building project of any size from the Atlantic to the Pacific and many overseas. They have gained this recognition through real merit that has extended over a long period of years.

Symons Wall Forms are new, but we feel that they are in this same class, otherwise we would not offer them to you. As regards our wall ties that hold both ways — no spreader washers — and that break back easily and accurately, we are sure you will agree they are tops. Not often are so many good features combined in one.

Try out our system of wall form construction and you will be ahead.

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SYMONS CLAMP AND MFG. COMPANY

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